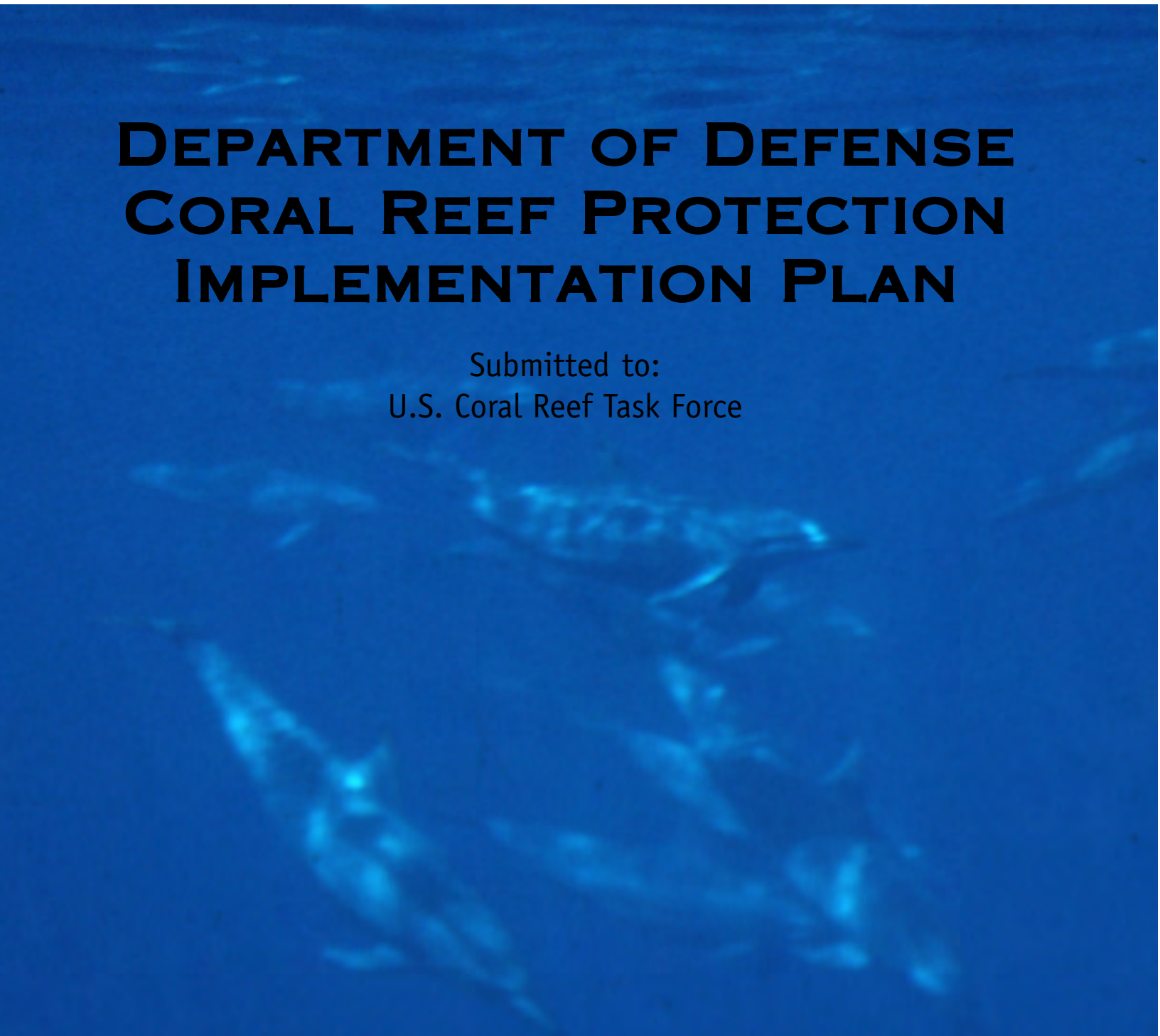
Coral Reef Protection Implementation Plan

Department of Defense Coral Reef Protection Implementation Plan

Submitted to:
U.S. Coral Reef Task Force



The Office of the Secretary of Defense designated the Department of the Navy to act as the DoD representative to the Coral Reef Task Force.

This Coral Reef Protection Implementation Plan was developed with contributions from the Navy, Army, Air Force, and Marine Corps. Text was drafted by ADI Technology, Inc. under the direction of the Naval Facilities Engineering Command. Publication edited and designed by Lisa Kerr Lobel and Dr. Phillip Lobel, Boston University Marine Program. Publication date; November, 2000.

Inquiries regarding the DoD Coral Reef Protection Implementation Plan or other DoD coral reef protection activities should be referred to the Office of the Assistant Secretary of the Navy (Installations and Environment).

Preface

After a brief introduction, this publication is divided into six sections plus appendices describing the Department of Defense's policies, actions and programs related to coral reef conservation and protection.

Section One provides an overview of DoD authorities and policies pertaining to the protection of coral reef ecosystems.

Section Two describes actions potentially affecting U.S. coral reef ecosystems. Military Services are advised to rapidly resolve or minimize any conflicts between coral reef protection and the military's mission.

Section Three discusses existing funding sources available to the Military Services to implement Executive Order 13089.

Section Four enumerates ongoing programs and projects that demonstrate the military's commitment to the protection and enhancement of coral reef ecosystems through other mandates and authorities. Such protection efforts include measures taken during military operations and training exercises; shipboard pollution prevention; DoD's pollution prevention program; oil spill prevention, response and clean-up; invasive species management; and land management practices.

Section Five examines DoD stewardship initiatives to protect and enhance coral reef ecosystems.

Section Six presents DoD's continued effort to protect coral reefs and associated habitats and describes future directions in DoD coral reef protection programs.

For reference, information on legal authority and related legislation, Executive Order 13089, DoD Coral Reef Policy Documents, Air Force, Army, Marine Corps and Navy Coral Reef Policy Memoranda, and/or related DoD and/or service policy reference listings are included as appendices.

Contents

Introduction

Coral reefs include more than just corals. They are made up of a vast assemblage of living organisms including various forms of plant, animal, and microbial life.

Surgeonfish schooling on a reef, Johnston Atoll.

Coral reefs are among the most diverse, complex, and beautiful ecosystems on Earth. Reefs are a conglomeration of many organisms including algae, corals, gorgonians, anemones, zooanthids, and other benthic organisms that create habitat. Living animals build the beautiful formations that we normally envision when we think of coral reefs. The outer surface of corals is covered with numerous individual animals with symbiotic algae living in their tissues. These animals secrete a carbonate exoskeleton, that over long periods of time, forms the coral's three-dimensional structure. Reef surfaces swarm with fishes, crustaceans, abundant mollusks, and worms. There are, of course, many more tiny animals and plants living secretly in reef crevices and deep holes that human visitors rarely see. Many of these organisms are still scientifically unknown and no one has yet accurately estimated the total number of different species living on reefs.

We do know, however, that parts of the reef ecosystem depend upon one another, and that the reef ecosystem depends upon neighboring systems. For example, reef herbivores, such as the long-spined sea urchin, consume algae that might otherwise smother living corals. The larval stages of many reef animals drift as plankton in the open ocean, and there are also reef connections to sea grass meadows, sand flats, intertidal zones, and mangroves. Thus the complex web of reef life intertwines with the larger lattice of Earth's biodiversity.

Millions of people depend on coral reefs for food and livelihood, and coral reefs directly enhance human habitat. Because of their beauty, coral reefs are also important recreationally, underpinning a worldwide tourist industry. The coral reefs of Florida alone have been estimated to generate nearly $2 billion annually from recreational use. Reefs also protect coastlines from erosion and wave damage and create sheltered lagoons for boat mooring and fishing.

Little was known about the global health of coral reef ecosystems until about 10 years ago, when government agencies and environmental interest groups in the United States and abroad began wide-scale monitoring and assessment programs. Since then, scientists have discovered that many of the world's coral reefs are gravely imperiled and will continue to deteriorate unless more is done to protect them. Human activities such as coastal development, destructive fishing practices, pollution, and sedimentation are the leading causes of coral reef degradation worldwide.

The Coral Reef Task Force

In response to the growing concern about the plight of coral reefs, President Clinton signed Executive Order 13089 (referred to herein as the Order) on June 11, 1998 (see Appendix A). This Order directs Federal agencies to study, restore, and conserve U.S. coral reef ecosystems. Coral reef ecosystems are defined in EO 13089 as "those species, habitats, and other natural resources associated with coral reefs in all maritime areas and zones subject to the jurisdiction or control of the United States (e.g., Federal, State, territorial, or commonwealth waters), including reef systems in the south Atlantic, Caribbean, Gulf of Mexico, and Pacific Ocean." For the purposes of this report, the term "coral reef" means any reef or shoal comprised primarily of the skeletal material of species of the order Scleractinia (class Anthozoa). This Order supports recent international efforts—such as the International Coral Reef Initiative, established by the United States in 1994, and the 1997 United Nations' "Year of the Reef"—to collect information about reefs and educate the public about the significance of these valuable resources worldwide.

The U.S. Coral Reef Task Force (CRTF) was established under the Order to strengthen and coordinate cooperation among Federal agencies in the stewardship and conservation of the nation's reef ecosystems. All major Federal agencies, plus State and territorial partners, are members of the Task Force. As outlined in the Order, the Task Force has four major responsibilities:

✧ Coordinate a comprehensive program to map and monitor U.S. coral reefs;

✧ Develop and implement research to identify the causes and consequences of coral reef ecosystem degradation;

✧ Conserve, mitigate, and restore coral reef ecosystems; and

✧ Foster international cooperation for protection, and promotion of conservation and sustainable use of coral reef species.

This implementation strategy for Federal agencies is contained in the CRTF's *Draft Oversight of Agency Actions Affecting Coral Reef Protection*. This document establishes CRTF and Federal agency duties as set forth in the Order, and defines the process through which related Federal agency program information will be disseminated. To assist the Task Force in developing an implementation strategy for Federal agencies, each member Federal agency will provide a report that describes how it will implement policies for protection of coral reef ecosystems. Agency reports will discuss current guidance, procedures, programs, and operations that may impact coral reef ecosystems. These reports will also serve as an awareness tool for agencies to evaluate measures to protect and monitor coral reef ecosystems.

Members of the U.S. Coral Reef Task Force

Co-chair: Department of Interior
Co-chair: Department of Commerce
(National Oceanic & Atmospheric Administration)
Environmental Protection Agency
Department of Agriculture
Department of Justice
Department of Defense
Department of Transportation
National Science Foundation
National Aeronautics and Space Administration
Department of State
Agency for International Development
State of Hawaii
State of Florida
Territory of Guam
Commonwealth of Puerto Rico
Territory of the U.S. Virgin Islands
Commonwealth of the Northern Mariana Islands
Territory of American Samoa

DoD gives high priority to the protection of coral reef Ecosystems

The Department of Defense (DoD) is pleased to submit this Coral Reef Protection Implementation Plan. Its purpose is to provide guidance and information to both its forces and other agencies regarding the protection on coral reef ecosystems. The information provided in this document outlines steps DoD has taken and will take in the future to protect and conserve these unique ecosystems. As demonstrated through the following policies and actions, DoD gives high priority to the protection of coral reefs as part of its ongoing commitment to environmental stewardship. The Military Services comprising DoD (the Air Force, Army, Navy, and Marine Corps) generally avoid coral reef areas in their normal operations except for some mission-essential ashore and afloat activities. The Navy, for example, does not routinely navigate near coral reefs because reefs pose a navigational hazard to both surface ships and submarines.

The Military Services also work to minimize activities on their installations that may negatively impact coral reef ecosystems. All of the Military Services have active programs to comply with environmental and natural resource protection laws. Although most environmental legislation was not passed for the protection of coral reefs *per se*, DoD's compliance with the Clean Water Act, Ocean Dumping Act, Oil Pollution Act, Coastal Zone Management Act, and other statutes directly benefits coral reef ecosystem conservation. As with all DoD natural resources stewardship, it is and will continue to be, our policy to ensure safe and environmentally responsible action in and around coral reef ecosystems.

Above: A fighter jet takes off from Wake Atoll.

Right: A submarine crew relaxes off the coast of Maui, Hawaii.

Lower Right: The USS Niagara Falls coming into port in Saipan, CNMI.

This Coral Reef Protection Implementation Plan describes DoD implementation of the Order through existing programs, authorities, and policies, and current funding authorities. It does not provide or implement any new policies or regulations, nor does it create any new responsibilities for DoD or the Military Services.

Section One

Executive Order 13089 and DoD Policies to Protect Coral Reef Ecosystems

DoD Authorities and Policies Protect Coral Reef Ecosystems

Federal regulations promulgated by DoD in Title 32, Part 190 of the Code of Federal Regulations require that the Department

> *"act responsibly in the public interest in managing its lands and natural resources. There shall be a conscious and active concern for the inherent value of natural resources in all DoD plans, actions, and programs. Natural resources under control of the Department of Defense shall be managed to support the military mission, while practicing the principles of multiple use and sustainable yield, using scientific methods and an interdisciplinary approach. The conservation of natural resources and the military mission need not and shall not be mutually exclusive."*

Moreover, Part 190 establishes that the heads of the Military Services and directors of DoD agencies with land management responsibilities are trustees for natural resources under their jurisdiction. In keeping with its regulatory responsibilities, DoD has long recognized that coral reef ecosystems are biologically rich and diverse habitats worthy of protection, and consequently, existing policies recognize the importance of coral reef biodiversity and the need for international protection.

Supporting the participation of the United States in the International Coral Reef Initiative and as a member of the U.S. Coral Reef Task Force, DoD is advancing coral reef conservation by developing management policies for coral reef ecosystems held in trust by the Military Services throughout the world. Furthermore, DoD realizes that its continued vigilance is essential because military activities both ashore and afloat have the potential to harm coral reef ecosystems if they are not properly planned and managed.

Ecosystem Management Policy Directive

The "Implementation of Ecosystem Management" memorandum issued on August 8, 1994, by the Deputy Under Secretary of Defense (Environmental Security)[DUSD(ES)] adopts an ecosystem approach to management of military lands. This early directive articulates the biodiversity conservation policy that underlies DoD's approach to natural resource management including coral reef preservation and enhancement. The goal of this policy is to:

> *"Maintain and improve the sustainability and native biological diversity of terrestrial and aquatic, including marine, ecosystems while supporting human needs, including the DoD mission." [DoD Instruction 4715.3]*

Coral polyps open at night to catch live prey with stinging cells on their tentacles. The symbiotic algae (zooxanthellae) living in coral tissues produce energy during the day to supplement that received from eating live prey. These polyps are about 1/4 inch across.

Left- Soft corals on a Palau reef.

Environmental Conservation Program

Conservation management strategies for natural and cultural resources on DoD installations (including operations and activities) in the United States, territories, trusts and possessions are set forth in the DoD Instruction 4715.3, *Environmental Conservation Program*, issued on May 3, 1996. Many of these policies are applicable to coral reef ecosystem protection. DoD Instruction 4715.3 directs all DoD conservation programs to:

✧ Work to guarantee continued access to our land, air, and water resources for realistic military training and testing while ensuring that the natural and cultural resources entrusted to DoD care are sustained in a healthy condition for scientific research, education, and other compatible uses by future generations.

✧ Within available resources, plan, program and budget to achieve, monitor, and maintain compliance with all applicable Executive Orders, Federal natural and cultural resources statutory and regulatory requirements and State regulations as required.

✧ Manage natural resources under the stewardship and control of the DoD to support and be consistent with the military mission, while protecting and enhancing those resources for multiple use, sustainable yield, and biological integrity.

✧ Incorporate the principles of ecosystem management into installation Integrated Natural Resources Management Plans (INRMPs). INRMPs shall be prepared, maintained, and implemented for all lands and waters under DoD control that have suitable habitat for conservation and management of natural ecosystems.

✧ Utilize best management practices (BMPs) to minimize nonpoint sources of water pollution.

✧ Conduct DoD operations, activities, projects, and programs that affect the land, water, or natural resources of any coastal zone in a manner that is consistent with the Coastal Zone Management Act.

Other statements within this policy also promote an ecosystem approach to management and pertain to coral reef management. These include:

✧ Maintain or restore native ecosystem types across their natural range of variation.

✧ Maintain or reestablish viable populations of all native species in areas of natural habitat, when practicable.

✧ Maintain evolutionary and ecological processes, such as disturbance regimes, hydrological processes, and nutrient cycles.

✧ Manage over sufficiently long periods to allow for changing system dynamics.

✧ Plan to accommodate human use as necessary.

The Nassau grouper is an important food fish throughout the Caribbean. Adult fish migrate long distances annually to spawning aggregation sites. Since the adults are then concentrated in one location, the population can be rapidly overfished. As a result, most of the spawning aggregations in the Caribbean have been severely reduced or eliminated. This grouper is about two feet long.

Coral Reef Distribution Throughout the World

Coral Reefs

Corals grow in all waters including polar and temperate seas. However, coral reef formation is limited to tropical waters bounded by the 20°C surface isotherm. The largest reef systems are the Great Barrier Reef of Australia and the Barrier Reef off of the Caribbean coast of Central America. Coral reef formation is restricted not only by temperature but also by depth. In shallow water with adequate light penetration, the sybiotic zooxanthellae are able to photosynthesize, which greatly increases a coral's ability to secrete calcium carbonate and therefore form reefs. Since light is a limiting factor in reef formation, reefs are not found in water that is deeper than 50 to 70 meters. This depth restriction is why most reefs are found on the margins of continents or islands. Other limiting factors for the growth of coral reefs include salinity and sedimentation. Corals do not tolerate a wide range of salinities and reefs are generally absent from areas with freshwater discharge, such as the mouths of rivers. In addition, most corals have a limited ability to remove sediment from their surfaces. Sediment in the water not only decreases the amount of light a coral receives, it clogs the coral's feeding structures, eventually killing it.

Military Installations

The U.S. maintains several military installations in the vicinity of coral reef ecosystems. Some oth these areas include:

Pacific Ocean
- ✧ Commonwealth of the Northern Marianas Islands
- ✧ Hawaii
- ✧ Johnston Atoll
- ✧ Kwajelein Atoll
- ✧ Guam
- ✧ Wake Atoll

Atlantic Ocean
- ✧ Cuba
- ✧ Key West and Panama City, Florida
- ✧ Puerto Rico
- ✧ U.S. Virgin Islands

Indian Ocean
- ✧ Diego Garcia

Department of Defense Coral Reef Policy Statements

One of DoD's earliest policy documents in direct support of coral reef protection and the International Coral Reef Initiative was the DoD Coral Reef Policy Statement issued on September 3, 1997 (Appendix C). The statement declares that

> *"DoD will identify important reef areas held in trust by the U.S. Military, develop management guidelines and policies to enhance protection of coral reef ecosystems, and initiate long-term monitoring efforts to determine the health of these ecosystems over time."*

This policy statement also declares that DoD actions in proximity to coral reefs will conform to host nation agreements, consistent with DoD mission requirements.

A Philippine reef teeming with fishes. The Philippines have one of the highest concentrations of tropical reef animals in the world. More than 2,000 species of fishes and dozens of corals occur there. The number changes because new species are being discovered all the time.

Right - A coral formation in Belize, Caribbean. While the Caribbean is a younger ocean, and has fewer species of fishes and corals, new species of fish are still being discovered there as well.

The Mandarin fish is also called the psychedelic fish, for obvious reasons. How and why coral reef fishes have evolved such fantastic colorations is the subject of much speculation. This fish is an adult and is only about three inches long.

The Department of Defense Policy Statement on Executive Order 13089

The Department of Defense Policy Statement on Executive Order 13089 – Coral Reef Protection issued on August 3, 1998, reiterates the requirements of and exceptions to the Order. Furthermore, it states DoD policy is:

✧ To protect U.S. and International coral reef ecosystems and to avoid impacting coral reefs to the maximum extent feasible.

✧ To responsibly manage and restore coral reef ecosystems in carrying out the terms of all laws, regulations, and policies concerning coastal zone management and coral reef protection.

✧ To conduct an environmental review of any action likely to affect U.S. coral reef ecosystems in accordance with the National Environmental Policy Act, EO 12114, and current DoD policies. Mitigating measures are required where coral reef impacts are unavoidable. Because re-establishment of living coral reef ecosystems may take hundreds of years, full mitigation or replacement is generally not feasible. Therefore, proponents of the activity that would cause the loss of such resources shall recommend appropriate compensatory measures. Federal regulations regarding Natural Resource Damage Assessments can be consulted when developing criteria for such mitigation.

Right: A nudibranch (about one inch long) forages over algae in the Philippines. A nudibranch is related to snails but lacks the external shell. The algae is *Halimeda*, a calcareous alga that contributes to sand formation.

NOTE: For a listing of all DoD authorities related to coral reef ecosystem protection, see Appendix A.

Military Service Policies

In response to DoD coral reef policies and the Order, the Military Services have issued policy memoranda directing installations to avoid impacts to coral reef ecosystems and to plan and budget for projects that will sustain coral reefs (Appendix B). Each Military Service requires compliance with the Order and DUSD(ES) policy, and any field action likely to affect a coral reef ecosystem must undergo environmental review. DoD requires commands to perform environmental reviews of planned actions that may impact U.S. coral reef ecosystems. Installations and fleets must also report such actions and recommend mitigation measures through the chain of command. Navy has implemented extensive coral reef protection policies since, by the nature of its mission, Navy operates extensively in the marine environment.

Naval Warfare Publication (NWP) 4-11, "Environmental Protection" outlines environmental protection measures that must be considered by Naval operational commanders when planning for and conducting warfare and training exercises. NWP 4-11 directs commanders and planners to be informed about potential environmental effects to determine how best to prevent or mitigate these effects without compromising operational objectives. Commanders are instructed to consider the characteristics of the environment potentially affected by their activities, particularly with regard to environmentally sensitive areas including "unique biota such as coral reefs." Training and combat exercises must include provisions for the proper management of ship and vehicular operations to avoid damage to coastlines, coral reef and associated ecosystems, beaches, and habitats. Future revisions of this instruction will consider EO 13089 and DoD coral reef protection requirements.

During military operations (at times other than war), commanders must comply to the extent practicable with any unique environmental protection requirements associated with the area of operations, including "measures to protect environmentally sensitive areas, such as coral reefs." If any scheduled military activity has the potential to significantly impact these areas, commanders must identify methods for mitigating damage. Because these are rare and irreplaceable natural resources, every effort is made to identify, avoid, and monitor them during exercises to ensure damage is not incurred.

Section Two

IDENTIFICATION OF DoD ACTIONS THAT MAY AFFECT CORAL REEF ECOSYSTEMS

How does DoD Identify Actions That May Affect U.S. Coral Reef Ecosystems?

The Order requires all Federal agencies, whose actions may affect U.S. coral reef ecosystems, to identify such actions so as to seek new ways to avoid damage to or to conserve, mitigate or restore coral reefs. Prior to this direction, each Military Service had already set in place procedures to recognize and avoid, when possible, any negative impacts on native natural resources, including coral reefs, before undertaking a new training or operational exercise, construction, or other type of action. Identifying and reducing potential impacts on coral reef ecosystems is accomplished through a variety of mechanisms, including the use of existing programs to comply with the National Environmental Policy Act (NEPA), the Sikes Act (through the development and implementation of INRMPs), Clean Water Act (CWA), Endangered Species Act (ESA), the Coastal Zone Management Act (through Coastal Zone Consistency Determinations), Essential Fish Habitat requirements, the Marine Protection, Research, and Sanctuaries Act (MPRSA), and the River and Harbors Act (for complete listing, see text block).

Relevant Laws and Executive Orders

National Environmental Policy Act of 1969
Sikes Act of 1997
Clean Water Act of 1977
Executive Order 12114 – Environmental Effects Abroad of Major Federal Actions, 1979
River & Harbors Act of 1899-Aids to Navigation
Endangered Species Act of 1973, as amended, 1978
Fish and Wildlife Conservation Act of 1980
Coastal Zone Management Act of 1972, as amended
Marine Protection, Research and Sanctuaries Act of 1972
Ocean Dumping Act
Act to Prevent Pollution from Ships of 1980, as amended
Marine Mammal Protection Act of 1972
Magnuson-Stevens Fishery Conservation and Management Act of 1996
Coastal Barrier Resources Act of 1982
Oil Pollution Act of 1990
Executive Order 12777 – Oil Pollution Act Implementation
Comprehensive Environmental Response, Compensation, and Liability Act
Executive Order 13112 – Invasive Species, 1999
National Invasive Species Act of 1996
Executive Order 13089 – Coral Reef Protection, 1998
Executive Order 13158 – Marine Protected Areas, 2000

Left - A WWII warship wrecked on the reef of Enewetak Atoll.

Environmental Impact Assessment Process

NEPA requires Federal agencies to evaluate the impact of major actions occurring or having an effect on the natural and manmade environment within the territory of the U.S. Proposed actions with potential to impact coral reef ecosystems within the territorial seas of the U.S. are subject to analysis under NEPA.

EO 12114, Environmental Effects Abroad of Major Federal Actions, requires agencies to evaluate the impact of major actions occurring outside the U.S., its territories, and possessions. Proposed actions with potential to impact coral reef ecosystems beyond the territorial seas of the United States are subject to analysis under EO 12114.

There are many interactions in coral reef ecosystems. In this photo, the Pacific blue seastar clings to a reef next to two blue nudibranchs. The starfish also makes a nice perch for a small goby.

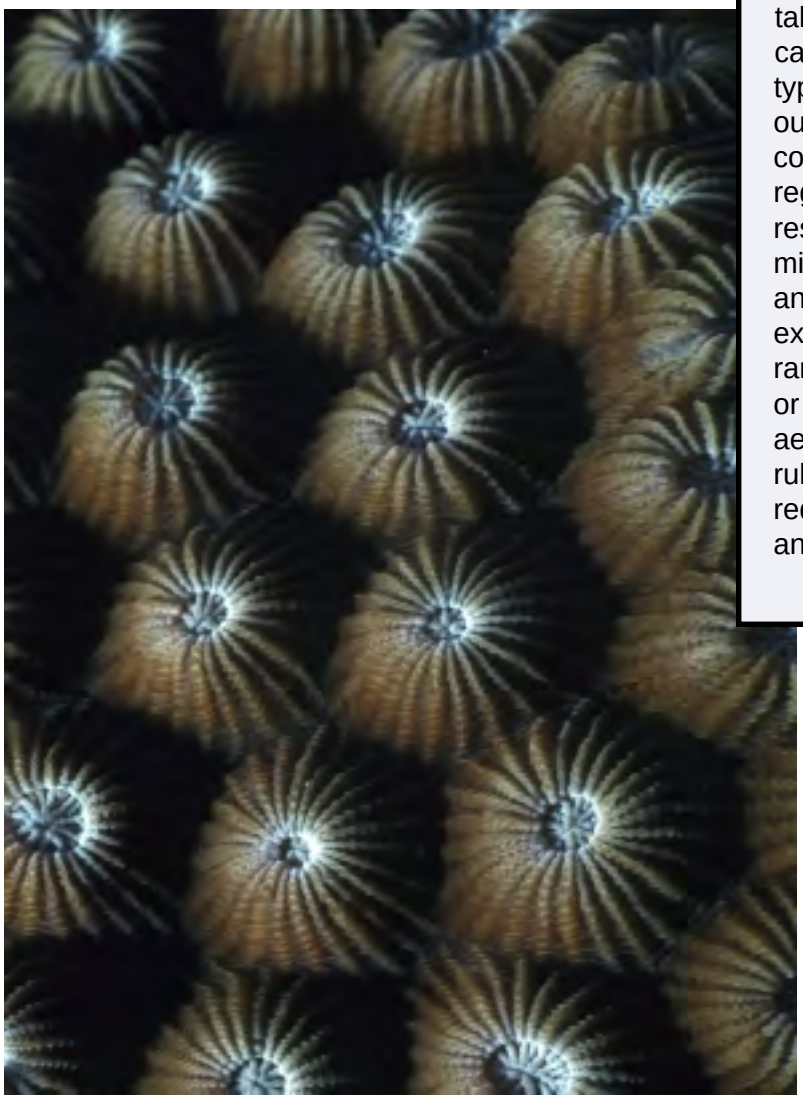
Depending on the location, scope, and potential impact, this analysis is contained in either a Categorical Exclusion, Environmental Assessment (EA) or Environmental Impact Statement (EIS) under NEPA, or Environmental Study or Concise Review under EO 12114. As the mechanisms for the Military Services to evaluate major actions for impact to the environment, NEPA and EO 12114 are the primary programs under which DoD can identify actions that may impact coral reef ecosystems.

The Chief of Naval Operations, Environmental Planning/NEPA Compliance Branch maintains a Navy NEPA/EO 12114 database of EAs and EISs produced since passage of NEPA in 1969. This database also includes Overseas EAs, Overseas EISs, and Environmental Reviews since the signing of EO 12114. CNO is the central point of contact for access to these electronic documents, which can be searched by specific terms or subjects (e.g., coral reef). The archive is currently undergoing conversion to dtSearch, a software package that will enable a faster, more efficient, and "user friendly" search, view, and print capability. Other Military Services will utilize their own NEPA/EO 12114 process to identify actions that may affect coral reef ecosystems.

Integrated Natural Resource Management Plan (INRMP)

An INRMP is a planning document that charts the use and conservation of natural resources on lands and waters under DoD control. While primarily for use by the installation's Natural Resources Manager, the INRMP also provides master planners with baseline information necessary for the development of master plans. An INRMP also serves as a principal information source for preparing EAs or EISs for proposed installation actions. In addition, INRMPs provide the basis for formulating the natural resources budget. Each plan strives to balance the management of ecosystem resources unique to each installation with mission requirements and other land use activities affecting an installation's natural resources.

Closeup of closed coral polyps. The greenish/ brown color is the symbiotic micro-algae, named zooxanthellae.



An integrated plan requires input from military planners and trainers, scientists, natural resources managers, regulatory agencies, and the public. The final plan reflects the cooperation and basic agreement of the U.S. Fish and Wildlife Service, the Department of Fish and Game of the relevant State, and the National Oceanic and Atmospheric Administration (as appropriate) with respect to management of fish and wildlife. [Specific policy guidance for the development of INRMPs is provided in specific Military Service instructions.]

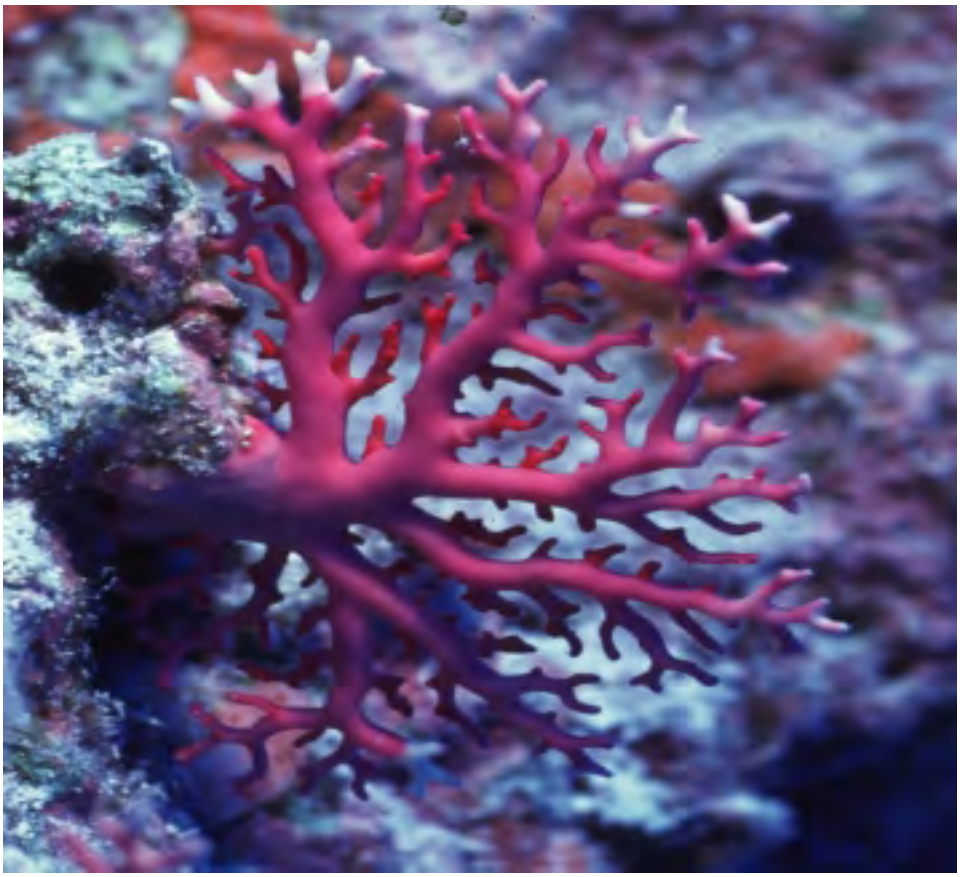
When Is an INRMP Required?

Generally, installations that occupy land and water or property suitable for the conservation and management of natural resources must prepare and implement a comprehensive INRMP by November 17, 2001. INRMPs must be continually monitored, reviewed annually, updated if necessary, and re-approved at least every five years. These evaluations require at least one natural resources professional to render an opinion, based on a minimum of a site visit and current general assessment of the resources. Evaluations take into consideration military uses of the area and capacity to support the mission; acreage, habitat types, and special natural features; aesthetics; outdoor recreational opportunities; the ecological context of the installation within its physiographic region; and the local community and cultural resources context. Even a very small installation might require a plan if it is important to conservation and management of natural resources. For example, if the installation provides a habitat that is rare in the area or that is in proximity to a coral reef, or it is important to the local community for aesthetic reasons, an INRMP is justified. A general rule of thumb might be that if the installation requires natural resources funding, it should have an INRMP.

Military installations whose operations may affect a coral reef ecosystem must consider protective measures, and these measures must be included in the installation's INRMP. The primary focus of the INRMP is to balance resource management with mission requirements and other land use activities that affect an installation's natural resources. This includes the management of coral reef ecosystems where such systems are deemed "under DoD control."

Actions Identified through Coastal Zone Consistency Determination

The Coastal Zone Management Act requires Federal actions that are reasonably likely to affect any land or water use or natural resource of the coastal zone to be consistent with the enforceable policies of a coastal State or territory's Federally-approved coastal zone management (CZM) program. The Military Services are subject to Federal consistency requirements and therefore must ensure that they adequately consider and comply with State CZM plans.



The delicate "pink lace coral" shown here is not a true coral but a relative called a hydrocoral. This colony is about five inches across.

Beautiful corals like this easily become rare due to collectors removing them to sell in the curio or jewelry trade.

To undertake an action affecting the coastal zone of a State with an approved CZM plan, a Military Service must first coordinate with that State's CZM progam. After making any necessary changes to the proposed action, the Military Service must provide a statement demonstating consistency with the CZM plan which is reviewed by the CZM regulator. Through this process, the Military Services can identify actions that may impact coral reef ecosystems in States with an approved CZM plan.

Actions Identified by the U.S. Army Corps of Engineers Regulatory and Water Resources Development Programs

The Army Corps of Engineers (Corps) administers regulatory programs under the Marine Protection Research and Sanctuaries Act (MPRSA), Section 10 of the Rivers and Harbors Act, and CWA Section 404. The Section 404 program, which the Corps administers jointly with the Environmental Protection Agency (EPA), provides for a permit program to regulate the discharge of dredged or fill material into waters of the United States. The Section 404(b)(1) guidelines, which are codified, set forth standards to be used by the EPA and the Corps in the permit application review process. These guidelines require that permit applicants evaluate potential environmental impacts and/or prohibited discharges, and determine if there are practicable available alternatives. Under these same guidelines, coral reef ecosystems are now classified as "Special Aquatic Sites" and activities affecting such sites must undergo a higher level of review. This permitting process enables the Corps to identify potential adverse impacts to coral reef ecosystems.

The MPRSA prohibits the transportation of material by U.S. vessels for the purpose of ocean dumping unless authorized by a permit under the CWA. MPRSA describes criteria for the selection of proposed sites for the discharges of dredged material by EPA and the Corps, who must identify and avoid designation of sites that may result in adverse impacts to coral reef ecosystems, including consideration of potential transport of material from the site by currents or storm events. Site management plans are also required for designated dredged material disposal sites. In the event that there is potential for coral reef impacts, the required plans are carefully developed to provide for early detection of any such impacts. Avoidance of impacts to coral reef ecosystems may also be considered during the permitting process, and any necessary dumping permit terms and conditions should require measures necessary for the protection of coral reefs. Therefore, impacts to coral reef ecosystems can also be identified by the Corps through the MPRSA permitting process.

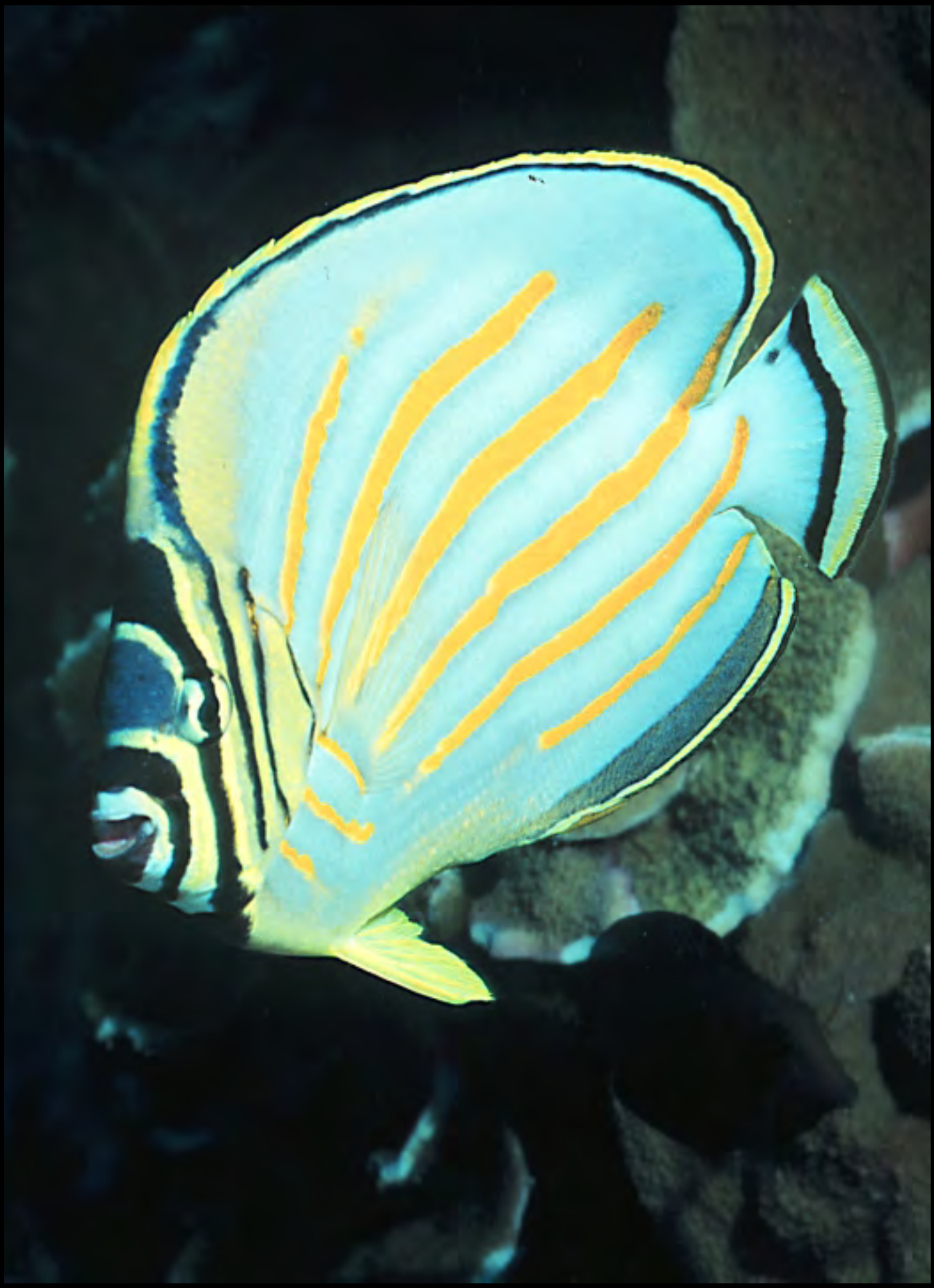
Section 10 of the Rivers and Harbors Act requires a permit for any work or structure, including fill material discharges, in or affecting the course, condition, location, or capacity of navigable waters of the U.S. and artificial islands, installations, or other devices on the Outer Continental Shelf. An important component of the permitting process is the public interest review, which compares potential project benefits against potential adverse impacts. As impacts to coral reef ecosystems are considered detrimental to the public interest, such impacts would be identified during this process. Corps findings for Section 10 permits should document how these impacts have been avoided.

In addition to the regulatory activities discussed above, the Corps undertakes the investigation and construction of water resources projects for varying purposes including flood damage reduction, navigation, and environmental restoration. When investigating the feasibility of these projects, the Corps does not permit its own activities undertaken in accordance with Congressionally authorized projects. However, the Corps must make findings that demonstrate compliance with the above regulatory requirements and other applicable laws, including those that pertain to the protection of coral reef ecosystems. CWA and NEPA guidelines require the Corps to consider all practicable and reasonable alternatives for proposed discharges of dredged or fill material into U.S or international waters, identifying the least costly alternative consistent with engineering and environmental requirements. Any potential impacts to coral reef ecosystems, and how these impacts can be avoided, should be documented in the Corps's findings, consistent with the relevant environmental requirements.

Process to Elevate Actions Determined to Affect Coral Reefs to Appropriate Service Level for Notification / Evaluation

Although DoD is a member of the CRTF, each Military Service is responsible for evaluating actions that may affect coral reef ecosystems and notifying its leadership if there could be a conflict between mission requirements and coral reef ecosystem protection. The emphasis of each Military Service's policy is to resolve any conflicts as quickly as possible for the benefit of the environment.

As an unfortunate consequence of overfishing on most Pacific Islands, schools of fish such as these jacks are rare, except at protected marine sites. Johnston and Wake Atolls are two U.S. DoD sites that still have big fishes at natural population densities thanks to the prohibition of commercial fishing.



Section Three

EXISTING FUNDING SOURCES FOR CORAL REEF ECOSYSTEM STEWARDSHIP

DoD projects and programs that protect, conserve, and enhance coral reef ecosystems stem from the military's commitment to natural resources and biodiversity conservation and ecosystem management. The goal of the DoD Environmental Security program is to ensure safe and environmentally responsible behavior throughout all military actions and organizations (DoD Directive 4715.1, 1996). Biodiversity conservation is the foundation of DoD's natural resources management approach, as demonstrated through the programs and projects below. These programs and projects are provided to encourage other installations to seek funding or undertake similar projects to protect coral reefs and marine ecosystems.

Butterflyfish, like the ornate butterflyfish to the left and the Eastern triangular butterflyfish below, belong to a diverse group of beautiful fishes that are used to monitor the health of coral reefs.

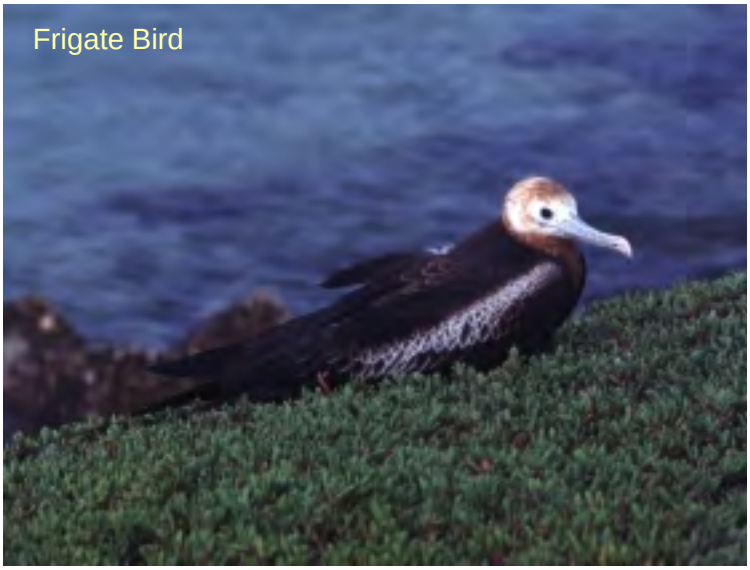
www.coral.noaa.gov/themes/butterfl.pdf

Operations & Maintenance Funding, Environmental Compliance

Operations & Maintenance (O&M) Funding for Environmental Compliance constitutes the majority of funding available for environmental efforts within DoD. This source funds projects and activities needed because an installation is currently out of compliance or is required to meet compliance deadlines associated with applicable Federal or State laws, regulations standards, or Executive Orders. Those natural resource-related activities may include natural resources conservation projects and monitoring or studies to assess and mitigate potential impacts of the military mission on conservation resources; planning documentation; baseline inventories of natural and cultural resources; biological assessments, surveys or habitat protection for specific listed species; mitigation to meet regulatory permit conditions; and nonpoint source pollution or watershed management studies or actions needed to meet compliance dates cited in approved State coastal nonpoint source pollution control plans. Environmental program requirements related to all major environmental legal requirements listed in Section Two are funded through this source.

Installations are encouraged to apply to the program through the Planning, Programming, Budgeting Process System for coral reef ecosystem projects in support of and required by the Order.

Significant funding is also provided on an annual basis to the Corps to administer its project investigation program through the Civil Works General Investigation Account. This project-related funding is subject to Congressional negotiations each fiscal year; however, the Corps is authorized to conduct aquatic ecosystem restoration studies under Section 206 of the Water Resources Development Act of 1996, allowing the Corps to aid in the restoration of damaged coral reef ecosystems.



Biodiversity Conservation

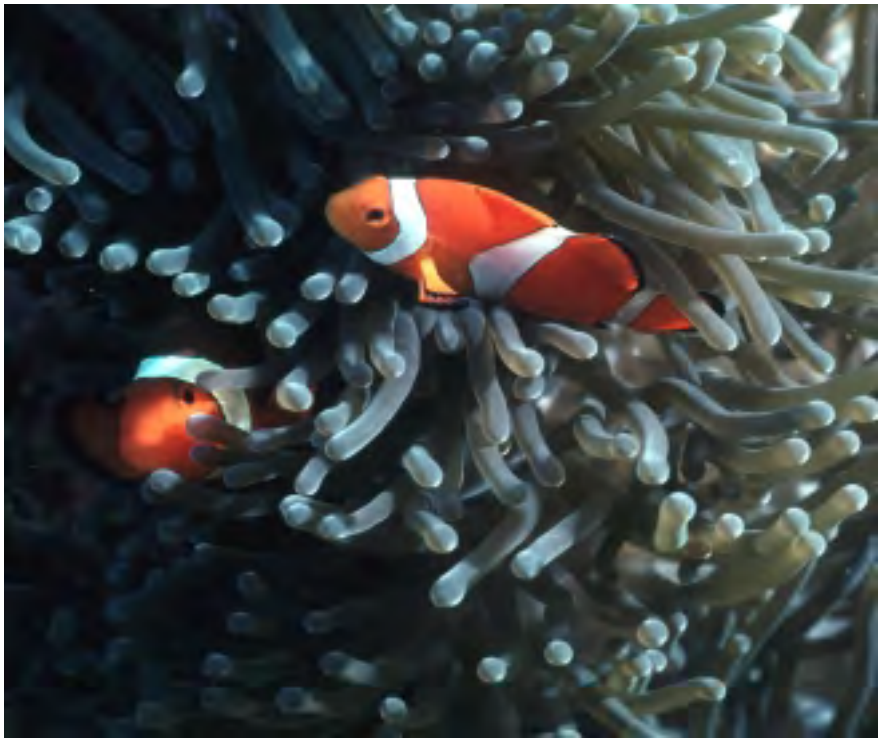
Helps maintain natural landscapes for realistic military training, now and in the future.

Helps DoD protect water resources, endangered species and other important resources.

Contributes to national security by helping maintain the natural resources upon which this country's strength depends.

Assures the American people that DoD is being a conscientious steward of the natural resources DoD holds in trust for them.

Enhances the quality of life for the American people.



A pair of clownfish hide in the tentacles of their host anemone. These fish are protected from predators by the stinging cells on the anemone's tentacles. The fish returns the favor by chasing away other fishes that feed on the anemone. Certain species of clownfish live only with certain species of anemones. Recent research suggests that the young clownfish imprint on the smell of their host anemone species while still in the egg, which is laid at the base of the anemone. These fish are about two to three inches long.

DoD Legacy Resource Management Program

The Legacy Resource Management Program was established in 1990 to provide financial assistance for DoD efforts to preserve our nation's natural and cultural heritage. The program assists DoD in protecting and enhancing resources while supporting military readiness. A Legacy project may involve regional ecosystem management initiatives, habitat preservation efforts, archaeological investigations, invasive species control, and/or monitoring and predicting migratory patterns of birds and animals.

Three principles guide the Legacy Program: stewardship, leadership, and partnership. Stewardship initiatives assist DoD in safeguarding its irreplaceable resources for future generations. By assuming a leadership role as part of the program, DoD serves as a model for respectful use of natural and cultural resources. Through partnerships, the program strives to access the knowledge and talents of individuals outside DoD.

In order to support these principles, the Legacy Program emphasizes five areas:

1. Legacy incorporates an ecosystem approach that assists DoD in maintaining biological diversity and the sustainable use of land and water resources for DoD's mission and other uses.

2. Legacy uses an interdisciplinary approach to resource stewardship that takes advantage of the similarities between DoD's natural and cultural resource plans. Often, the same person is responsible for managing both natural and cultural resource plans on an installation. Legacy strives to take advantage of this by sharing management methodologies and techniques across natural and cultural resource initiatives.

3. Legacy promotes understanding and appreciation of natural and cultural resources by encouraging greater awareness and involvement by both the military and the public.

4. Additionally, the program takes advantage of similarities among ecosystems by applying resource management initiatives in broad regional areas.

5. Finally, Legacy pursues the identification of innovative new technologies that enable more efficient and effective management.

Legacy-funded projects provide a concrete demonstration of DoD's commitment to the preservation and enhancement of coral reef ecosystems. Completed and ongoing projects funded by the Legacy Program are described in Sections Four and Five.

Pacific coral reef islands have a rich cultural history of their own but were also sites of many WWII battles.

A Japanese bunker on Wake Island is slowly buried in coral rubble.

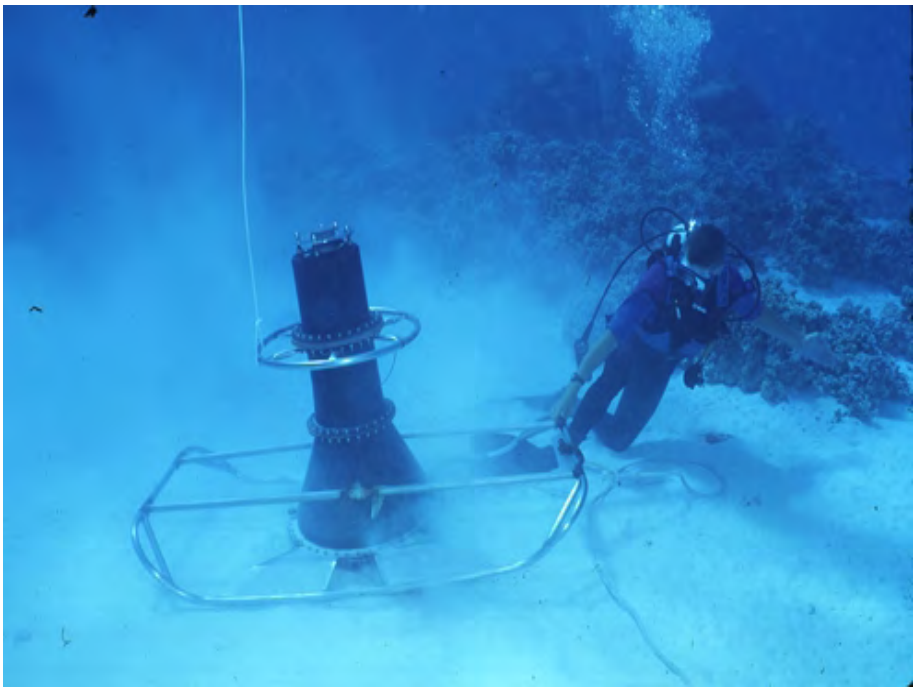
The remains of a war plane wreck in Saipan lagoon.

A U.S. tank that failed to make it ashore during the invasion of Saipan.

The Strategic Environmental Research and Development Program (SERDP)

SERDP is DoD's corporate environmental research and development (R&D) program, planned and executed in full partnership with the Department of Energy (DOE) and EPA, with participation by numerous other Federal and non-Federal organizations. SERDP funds environmental R&D in specified areas through a competitive process. Within its broad areas of interest, the SERDP focuses on Cleanup, Compliance, Conservation, and Pollution Prevention technologies. The purpose of the conservation technology program is to use research and development to provide improved inventory and monitoring capabilities; develop more effective impact and risk assessment techniques; and provide improved mitigation and rehabilitation capabilities. Recently, the program solicited Statements of Need for conservation technology proposals to research indicators of stress on threatened and endangered species and to develop techniques to inventory and monitor threatened and endangered species in inaccessible areas. Because coral reefs are an imperiled resource and, moreover, a resource that provides habitat for many sensitive species, coral reef research is a candidate for funding under this program.

This underwater radiation survey device is used to assess residual radioactivity from atmospheric nuclear tests in the lagoon at Johnston Atoll. The device was developed by scientists at Boston University with funding from the Defense Threat Reduction Agency.



A diver takes samples of marine sediments near an old 55 gallon drum for contaminants analysis at Johnston Atoll. Coral had already started growing over the drum. Samples were analyzed for polychlorinated biphenyls (PCBs), dioxins, heavy metals, and other potential contaminants.

The nautilus, while not considered a reef organism, lives on the deep slope adjacent to reefs and comes into shallow water at night to feed.

Section Four

DoD PROGRAMS TO PROTECT CORAL REEF ECOSYSTEMS

Military Activities and Training Exercises

It is DoD policy to avoid, where possible, adversely impacting coral reefs during training exercises and routine operations. Consistent with essential national security and mission requirements, DoD carefully plans maritime exercises and routine operations so as to avoid physical damage to coral reefs from ships and landing craft, and biological impairment from oil and fuel spillage, chemical/hazardous waste releases, and excessive noise. The military has demonstrated its commitment to coral reef conservation during past activities and operations by evaluating training programs to ensure these exercises do not damage nearby coral reefs. Specific examples include:

Geographic Information System (GIS) Planning

The Navy is developing GIS-based information on the marine environment to assist:

- ✧ Natural resources personnel in mapping and protecting sensitive marine ecosystems.
- ✧ Planning personnel in identifying areas requiring special considerations.
- ✧ Operators in determining time and locations of exercises to avoid impacts.

Coral reef assessment information will be a part of this GIS system to provide general locations, habitat condition information, and related marine fisheries information.

Additionally, several GIS planning tools are being developed to provide operational planners with environmental data needed to write the environmental planning documents. Conceptually, this system will take the planner through the development process, providing the planner with environmental sensitivity data to support the planner's decision-making process. By using the GIS-based approach with decision-making tools, greater access to environmental data will be available for all individuals involved in marine resource protection. This system will also serve as a helpful resource and checklist to ensure coral reef ecosystem protection as well as the protection of other marine resources.

Farallon de Medinilla (FDM) Coral Surveys

In accordance with the terms and conditions of the National Marine Fisheries Service (NMFS) biological opinion, pursuant to Section 7(b) of the Endangered Species Act of 1973 (as amended), the Navy is required to conduct annual marine surveys at FDM to evaluate the impacts to the marine environment from continuing bombing exercises. Use of FDM as a bombing range is a vital asset for the continued military readiness mission. The Navy along with representatives from NMFS, U.S. Fish and Wildlife Service (USFWS) and Commonwealth of the Northern Mariana Islands Division of Fish and Wildlife and Division of Environmental Quality have participated in these annual surveys. Previous surveys indicated no significant impacts to marine communities, endangered and protected species, fishery resources and existing coral. Navy will continue to monitor these areas annually.

Tandem Thrust 1999

The U.S. and Australian military conducted a series of ashore and afloat training exercises on the islands of Tinian and Guam in the Pacific in 1999. Because this training included amphibious landings on the island of Tinian, the presence of coral reefs and sea turtles around Tinian was of particular concern. To ensure that these species would not be adversely affected, the Navy conducted ecological surveys of the beach and coastal marine environments. Protection of these natural resources was given high priority in selecting landing corridors for the amphibious assault vehicles/craft. The Navy monitored the beaches and coral reefs before, during, and after the training exercises. The data indicate that the Navy successfully avoided any adverse impacts to coral reefs or other components of the marine community from the normal operations of landing craft air cushions (LCACs) undertaking beach landings.

Advanced SEAL Team Delivery System Training Device

Navy SEALs use this structure in training exercises to practice submarine docking maneuvers. Placement of this structure on the sea floor, off-shore of Pearl Harbor, Hawaii, was initiated only after divers selected an area free from coral reefs. The careful site selection process ensured that coral reef ecosystems would not be impacted by the structure or the practice maneuvers.

Atlantic Undersea Test and Evaluation Center (AUTEC)

Navy's AUTEC facility is located on Andros Island in the Bahamas. Prior to recent cable-laying activities for Navy hydrophone arrays in marine areas surrounding the Bahamas, divers surveyed the regions where fringe reefs were known to occur and mapped the locations of live coral. These maps were utilized to develop the cable-laying route and monitor the operation. To lay the cable, Navy divers slowly swam the cables to the sea bottom by using a special balloon to control their rate of descent and carefully guided the cables between areas containing coral to ensure cables were laid only on sand.

A patch reef at Johnston Atoll. There are a variety of corals, algae, and other marine life visible on a reef in just a glance.

Beautiful and delicate coral growth can easily be damaged by human activity without proper planning, mapping, and monitoring.

Marine Corps Base Hawaii

Marine Corps Base Hawaii (MCBH) is comprised of several land holdings on Oahu Island and one on Molokai Island in the State of Hawaii. Coral reefs exist within the 500-yard security buffer zone controlled by MCBH surrounding all three sides of the Mokapu peninsula portion of MCBH. When Marines transit from Mokapu Peninsula to Bellows Marine Corps Tactical Air Base (MCTAB) to practice amphibious beach landings, they carefully maneuver around the coral reefs that fringe the outskirts of Kailua Bay and Waimanalo Bay. They also maneuver in a manner that prevents damage to the coral when moving from ship to shore through coral reef patches and singular coral heads. Navy LCACS must do the same in Kane'ohe Bay along the northwest shoreline.

Pollution Prevention

Pollution Prevention (P2) programs being implemented across DoD are significantly reducing the amount of toxic chemicals and other pollutants used ashore and afloat. DoD's P2 policy (DoD Instruction 4715.4, 1996) focuses on education and training, acquisition of environmentally friendly products, efficient facilities management, energy conservation, and the use of innovative P2 technologies. DoD strategy also emphasizes integrating P2 into installation management and weapon systems acquisition, fostering an environmentally educated work force, and ensuring support from P2 technology research and development programs. To implement DoD's P2 strategy, installations are required to prepare individual P2 plans, which are updated regularly as operations change. In addition to demonstrating environmental stewardship, P2 has the added benefit of reducing operational costs, environmental compliance costs, and the life-cycle costs of weapons systems.

The tangible success of P2 is evident at the installation level, where the Military Services have created programs to assist personnel with P2 implementation at their facility. For example, the Navy developed the Consolidated Hazardous Material Reutilization and Inventory Management Program and Hazardous Inventory Control System software to track and manage hazardous materials from ship-to-shore. The Fleet Assistance Support and Technology Transfer Team, which was established to provide support in re-engineering processes, visits individual Navy facilities to provide recommendations for best management practices (BMPs) and to transfer and implement P2 technologies for the reduction of hazardous materials.

Johnston Atoll Chemical Agent Disposal System (JACADS) Pollution Abatement System

The JACADS facility, operated by the Army on Johnston Atoll, is the nation's first environmentally conscious chemical weapons incinerator and destruction system. Johnston Atoll is a small tropical atoll, 825 miles southwest of Hawaii. This hazardous chemical incinerator was built with an extensive pollution abatement system to ensure absolute minimal stack emmisions and that no other waste sources enter the environment. Johnston Atoll is an isolated coral reef ecosystem that uniquely shares species in common with both Hawaii and the Line Islands which lie south of Johnston. The marine biology of the atoll is unique and includes both an extensive reef system with about 310 fish species and a diverse migratory seabird community. DoD operates in partnership with the U.S. Fish and Wildlife Service in managing the atoll's natural resources. DoD applies both its operational and environmental experience at Johnston Atoll through a "Lessons Learned" program to similar facilities in the continental U.S.

The Johnston Atoll Chemical Agent Disposal System (JACADS) is an incinerator operation managed by the Program Manager for Chemical Demilitarization, Aberdeen Proving Ground, Maryland. The mission is to establish the protocol for environmentally safe destruction of chemical weapons. During every phase of operations, the Army has worked with the U.S. Fish and Wildlife Service, EPA, NOAA and environmental scientists to ensure that no harm would come to the coral reef environment. About 6% of the U.S. stockpile will be destroyed on Johnston and this mission will be completed by the end of 2000.

Shipboard Pollution Prevention

DoD aggressively manages shipboard pollution to avoid adversely impacting sensitive marine ecosystems such as coral reefs. Awareness of the detrimental impact that solid waste has on the marine environment and the growing public concern regarding the pollution of our oceans resulted in the passage of the Act to Prevent Pollution from Ships (APPS), which requires military vessels and other government non-commercial vessels to comply with strict shipboard pollution prevention standards.

Beaches throughout the world are littered with plastics and other garbage that washes ashore.

Solid Waste Management

Navy surface ships manage four types of solid waste: hazardous, plastic, biodegradable (food, paper, cardboard), and non-biodegradable (glass, metal). Plastic waste, which can take up to 450 years to decompose in a marine environment, includes *any* product containing plastic, including disposable razors and candy wrappers. To control plastic waste while afloat, Navy developed and installed shipboard plastic waste processors, which compress and melt plastic waste into small disks for storage. These disks are stored on board and brought back to shore for disposal or recycling.

Other solid waste generated on board includes organic waste, such as paper, cardboard, and food waste, and inorganic waste, such as glass and metal. This waste is disposed of in accordance with APPS. On-board pulpers process organic waste into a non-floating slurry that is non-toxic to marine organisms and authorized for overboard discharge. Glass and metal items are shredded and discharged in weighted burlap bags, which sink rapidly to the seafloor. Although corrosion and burial occurs over a longer time scale than organic decomposition, the total annual discharge of bags affects only a negligible amount of the ocean floor. The introduction of hazardous materials to a ship's inventory is strictly controlled and hazardous waste is brought back to shore for proper disposal.

Plastics Removal in Marine Environment (PRIME)

Reduction of plastic wastes is an important program within Navy, which has a zero plastics discharge policy (OPNAVINST 5090.1B, Environmental and Natural Resources Program Manual). All plastic and plastic waste is stored on board and brought back to shore for disposal or recycling. To reduce the total amount of plastics in the supply system, the Navy also established the PRIME office in 1990, which has evaluated over 350,000 items used on Navy vessels, with the aim of reducing or replacing items to eliminate plastic waste. These changes have resulted in the elimination of over 500,000 pounds of plastics previously taken on board Navy ships each year.

Plastic garbage is not only unsightly but poses a hazard to marine life. Seabirds ingest small brightly colored plastic pieces and feed it to their young who often die from lack of nutrition. Sea turtles accidentally ingest plastic bags which clog their digestive system. Sharks will also bite plastic objects as is the case with this plastic bottle.

Surface Ships

Navy surface ships actively manage solid waste from shipboard operations. Navy specifically addressed the potential impact of solid waste management and disposal to coral reef ecosystems in the Report to Congress: *U.S. Navy Ship Solid Waste Management Plan for MARPOL Annex V Special Areas* (November 1996). Section 5.4 of this report states that the "Navy does not routinely navigate near coral reefs." The primary reason for this is that coral reefs typically pose a navigational hazard to both surface ships and submarines. The report goes on to state that consistent with the APPS amendments, "navy ships will discharge no pulper effluent within 3 nautical miles (nm) of land and no shredded material within 12 nm of land." Since many coral reefs areas are located near coastal regions, the potential for exposure of coral reefs to such discharged material is minimal.

Submarines

The Navy submarine program addressed coral reef protection in the Report to Congress: *U.S. Navy Submarine Solid Waste Management Plan for MARPOL Annex V Special Areas* (December 1997). Section 5.3 of this report states that "submarines usually operate in the vicinity of coral reefs only when transiting into or out of port, and impacts on coral reefs would not be expected. By Navy policy, submarines discharge trash disposal unit (TDU) cans beyond 25 nm from land, or between 12 nm and 25 nm when the water depth is greater than 6000 feet; at that depth, coral reefs are unlikely to occur."

Waste Reduction Afloat Protects the Sea (WRAPS)

Navy also established the WRAPS program to reduce the amount of total solid waste brought on board. The goal of WRAPS is to reduce the amount of cardboard, paper, packing and shipping supplies and containers that accumulate on board. WRAPS coordinates with vendors to reduce the amount of packaging accompanying supplies purchased by Navy and is evaluating ongoing efforts to replace paper documents used on vessels with CD-ROMs and electronic form preparation.

Incidental Discharges

The Uniform National Discharge Standards (UNDS), found in Section 312 of the CWA, require DoD and EPA to evaluate unregulated discharges (such as deck runoff, bilge water and ballast water) incidental to military vessel operations, to determine if these discharges require control, and subsequently to develop marine pollution control devices (MPCDs) for discharges requiring control. MPCDs may be equipment or management practices. Through the UNDS process, EPA and DoD also will develop implementing instructions for the design, installation, and use of appropriate MPCDs.

During the initial evaluation of incidental discharges, 25 discharges were identified that require control to minimize their impact to the marine environment. The discharges were evaluated based on types and levels of chemicals they contained, their potential for causing thermal pollution, and their potential for introducing non-indigenous species. These standards will simultaneously protect marine ecosystems from pollution and enable DoD to design and build environmentally sound military vessels according to a consistent set of pollutant discharge standards.

DoD and EPA are currently identifying MPCD options and associated performance standards for each military vessel discharge requiring control. Ultimately, this rulemaking will result in enhanced environmental protection of the marine environment.

The endangered green sea turtle often mistakes plastic bags or other small plastic pieces for jellyfish, accidentally injesting them.

Oil Spill Prevention, Response and Clean-up

DoD recognizes that oil has lethal and almost immediate effects on a wide range of marine life associated with coral reef ecosystems, from algae to seabirds, resulting in death through asphyxiation and/or poisoning. Generally, oil floats on the ocean's surface, well above coral; however, coral may come into contact with oil in a number of ways. Weathering processes and waves breaking on the reefs may distribute droplets of oil into the water column. Sand blown from nearby beaches that lands on an oil slick can cause the oil to sink. Reefs in shallow water may be exposed to the air during low tides and can come into contact with oil on the surface or with dissolved toxic oil components encountered in the water beneath large oil slicks.

Seabirds are especially sensitive to oil spills. Not only do they ingest large amounts when trying to clean their plumage of oil, but the insulating properties of their feathers are lost, making them susceptible to heat or cold.

To prevent damage to marine ecosystems by accidental oil spills, DoD has many mechanisms in place, both ashore and at sea, to prevent the accidental release of oil into the environment and to provide a rapid response and clean-up action in the event of a spill. In addition to the well-established compliance programs on the installation level, DoD is a member of the National Response Team (NRT), established under the National Contingency Plan. Navy is the DoD Executive Agent for the NRT and possesses one of the world's largest inventories of oil pollution response equipment (containment, collection, and processing) with response capability available from a worldwide network of installations. In the event of large-scale oil spills, trained operators, mechanics, and supervisory personnel deploy from U.S. response centers with the appropriate equipment, and DoD maintains access to a full range of technical experts and advisors as well as specialty equipment from other government agencies, industry, and academic institutions. This spill response capability also assists in cleaning up non-Navy spills. For example, Navy fleet skimmers collected half of the oil recovered from the *Exxon Valdez* spill in Alaska.

Several Federal laws require DoD installations to develop oil spill prevention measures. Under the CWA, as amended by the Oil Pollution Act of 1990, facilities that store, transport, or dispense petroleum products are required to prepare a Spill Prevention Control and Countermeasure (SPCC) Plan. SPCC plans provide a history of oil spill events, the potential for discharge of oil, as well as containment procedures and equipment to prevent oil spills into U.S. waterways or shorelines. Facilities that, because of location, could reasonably be expected to cause substantial harm to the environment by discharging oil into or on navigable waters or adjacent shoreline must also submit Facility Response Plans and an associated personnel training program for a broad range of activities. The requirements of these plans vary depending on the type of facility; however, all must include an emergency section of the plan that provides concise response direction and extensive documentation of response drills and exercises.

Facilities have the option of consolidating multiple requirements and response plans into a single Integrated Contingency Plan (ICP). An ICP is a single response plan that fully complies with the applicable regulations and response plan requirements. ICPs reduce costs associated with developing facility contingency plans, including review, updating, and plan-resubmission. Ships must prepare shipboard spill contingency plans that contain procedures for reporting, containment, control, recovery and disposal of spilled material, and spill cleanup information. Ships annually conduct at least one oil or hazardous substance spill response drill for each duty section.

Homestead Air Force Reserve Base, Florida

This base is located about ten miles from Biscayne National Park, home to nearly 130,000 acres of coral reefs. The installation's spill protection plan addresses protection of these coral reefs.

National Oil and Hazardous Substance Contingency Plan (National Contingency Plan)

Established in Title 40, Part 300 of the Code of Federal Regulations, the purpose of the National Contingency Plan is to provide the organizational structure and procedures for preparing for and responding to discharges of oil and releases of hazardous substances, pollutants, and contaminants. As a member of the National Response Team charged with implementing the National Contingency Plan, DoD has responsibility to take all action necessary with respect to releases of oil or hazardous substances where either the release is on, or the sole source of the release is from, any facility or vessel under the jurisdiction, custody, or control of DoD. The U.S. Navy Supervisor of Salvage (SUPSALV) is the branch of service within DoD most knowledgeable and experienced in ship salvage, shipboard damage control, and diving. SUPSALV has an extensive array of specialized equipment and personnel available for use in these areas as well as specialized containment, collection, and removal equipment specifically designed for salvage-related and open-sea pollution incidents. This capability is critical for mitigating physical damage to coral reefs from ship collisions through removal of wrecked or grounded vessels and the cleanup of oil and hazardous substances released from such collisions.

Black band disease is a cyanobacterial infestation that eventually kills the coral colony. The epidemiology of this disease is unknown. More infections do seem to occur when corals are stressed. However, determining whether corals may be stressed due to “natural” causes (such as El niño) or due to anthropogenic changes (such as increased pollution) is extremely difficult.

Invasive Species Management

To minimize the risk of inadvertant introduction of non-indigenous species through ship ballast water, the Navy complies with the intent of the voluntary ballast water control guidelines issued by the U.S. Coast Guard. The Navy's "double exchange" policy requires that all tanks containing ballast water taken on within 3 nm of shore or in polluted areas be purged twice with clean seawater while the ship is farther than 12 nm from shore. Policy also requires ships to routinely wash down anchors, chains, and amphibious vehicles to prevent transfer of species through sediment. Through these protective measures, DoD may help avoid an introduction of an invasive species that could have the potential to significantly disrupt coral reef ecosystems and endanger unique species native to those environments.

In conjuction with the Navy, the Smithsonian Environmental Research Center (SERC) has initiated a study on the effectiveness of the Navy's ballast water exchange policy. SERC sampled ballast water from Navy vessels during ten day transits between Spain and Norfolk, Virginia. Ballast tanks were innoculated with a combination of tracers upon ballasting, and ballast water was sampled for each tracer before and following ballast water exchange. Results will be published shortly.

Above: The brown noddy lays its egg exposed on the ground. Consequently, it is vulnerable to introduced pests such as rats and the brown tree snake which has decimated Guam's avian fauna.

The planktonic stages of marine organisms are tiny. This photo (taken through a microscope) shows fish larvae and eggs, as well as the planktonic stages of shrimp and crabs. Since these larval stages are so small, they are easily taken up in ballast water. Special precautions must be made to prevent accidental introductions of exotic species into sensitive ecosystems like coral reefs.

DoD Invasive Species research

Coastal/Marine Biodiversity Inventory

Navy research at the Pearl Harbor Complex has produced a baseline inventory of Hawaiian aquatic species, their distribution, and their environmental and economic importance. This baseline will be used to assess how well public resource managers are conserving and managing coastal and marine resources for biodiversity. For the Navy, this baseline is needed to offset concerns raised that Naval operations may be associated with the introduction of these foreign species. Information from the inventory will contribute to improving the level of planning and coordination for the needs of all marine vessel traffic in Hawaii and for the prevention of future invasions of exotic species into Hawaii's aquatic ecosystem.

Marine Invasive Species: National Marine and Estuarine Exotic Species Database

The Navy is sponsoring a Legacy proposal to determine the extent, patterns, and effects of non-indigenous marine species invasions in selected coastal ecosystems and establish a comprehensive database of key data about these species necessary for management, policy, and research. This information will ultimately be used by DoD to understand general patterns of invasion, assess the abundance and significance of invasions in reducing biodiversity, and evaluate the effectiveness of management strategies for reducing the rate of invasions.

Diego Garcia Ship Husbandry Assessment

The Pacific Fleet's Naval Facility Engineering Command, with the support of Mobile Diving Salvage Unit 1, conducted a rigorous assessment to evaluate potential effects of the Military Sealift Command's ship husbandry activities on the coral reefs and marine environment offshore of Diego Garcia, a British island in the Indian Ocean. Qualitative and quantitative biological, chemical, and physical data were gathered, including sediment samples and tissue samples from fish and various invertebrates. Chemical analyses were completed in Honolulu by a marine organic chemist who specializes in hull coatings and their effect on marine organisms. The biological, chemical, and physical data all indicated that the Military Sealift Command's ship husbandry activities have not had a detectable adverse effect on the coral reefs or associated organisms in the area.

This species of sergeant major damselfish (*Abudefduf vaigiensis*) did not historically occur in Hawaii or Johnston Atoll, but is widespread throughout the Indo-Pacific. Usually the larvae could not survive long enough to travel between the Indo-Pacific and Hawaii. However, if there is floating debris such as large drift nets, the larvae can metamorphose into juveniles and can survive much longer. Large drift nets that were lost in the Indo-Pacific drifted all the way to Hawaii introducing this species which has now also spread to Johnston Atoll. Normally, brightly colored reef fish aren't considered invasive species, but in this case, this Indo-Pacific sergeant major may directly compete with its close relative, the endemic Hawaiian sergeant major, *Abudefduf abdominalis*.

Effective Land Management

Another vital factor in achieving protection of coral reef ecosystems is responsible land management. Though its effects on coral reefs are indirect, the management of land and facilities may impact coral ecosystems via factors such as erosion control (because sediments washed into coastal waters may settle upon and smother corals) and regulation of harmful point and nonpoint source pollutants discharged into waters onshore. In every respect, DoD strives to demonstrate good stewardship of coral reefs through its land management practices.

Above: Siversides sheltering in the roots of a Caribbean mangrove forest and seagrass bed. Mangrove and seagrass systems effectively prevent erosion of coastlines and act as filters for nearby coral reefs. The mangroves trap sediment from runoff as well as pollutants and excess nutrients.

Pollutant Control

Pollutants may be discharged into onshore waters directly (point sources) or may be washed there by runoff (nonpoint sources). Either venue can introduce substances into ocean waters that are harmful to the reef community, and both must be controlled. Military installations typically reduce potential nonpoint source pollution by applying best management practices (BMPs) for chemical/pesticide application and erosion control established in accordance with Section 208 of the CWA; they manage point source pollution by ensuring that discharges are consistent with the receiving water's Total Maximum Daily Load (TMDL) for each substance.

Going over and above mere compliance, DoD policy also encourages installations to become involved in local watershed protection efforts in their regions.

Sedimentation Control

Like pollutants, sediments can also be washed into ocean waters and jeopardize coral health. DoD minimizes sedimentation on its lands by implementing erosion control measures in onshore operations and taking reparative steps when necessary. A recent example of shoreline clean-up and restoration occurred at the Orote landfill on Guam. Debris was removed from the landfill and the site was capped to prevent leaching and sedimentation from impacting the nearby coral reef. This project is being carefully monitored to assess the recovery of the coastal habitat.

Below: An unprotected cliff at the base of the Orote landfill site on the Naval Station, Guam has been stabilized to prevent further landfill erosion into the Philippine Sea. This project has also enhanced the health of adjacent coral reefs by controlling sedimentation.
Photo by Naval Facilities.

No Net Loss of Wetlands

The Military Services have operated under a "no net loss" of wetlands since President Bush made this declaration back in 1988. Wetlands contribute to cleaner water in our shorelines, streams, and oceans by acting as filters for pollutants, trapping sediments, increasing habitat, and improving overall water quality and availability. Through mitigation of construction areas, cleanup of existing wetlands, or creation of new wetlands, most installations have contributed to preserving this land-based aquatic ecosystem, thus indirectly enhancing our coastal reef ecosystems.

DoD Protects Coral Reef Ecosystems through Responsible Land Management Practices

The following examples illustrate DoD's commitment to protecting coral reef ecosystems through responsible land management:

Marine Corps Base Hawaii (MCBH) Watershed Restoration

MCBH includes numerous facilities on several thousand acres within the Ko'olaupoko Region on O'ahu. Population growth and development throughout this region have increased erosion and polluted stormwater runoff. Concern about these growing nonpoint source pollution issues led to the inclusion of regional waterbodies in the State of Hawaii's List of Impaired Waters. The region has also been designated as Priority One for watershed restoration under the National Clean Water Action Plan. MCBH is working with over 700 volunteer partners on the Federal, State, and local levels to resolve these shared problems. Their collaborative projects have included efforts to improve water quality, water circulation, and endangered waterbird habitat; they have also conducted "watershed tours" for schoolchildren and provided instruction in watershed management techniques (e.g. establishment of native plant gardens) for teachers. The success of these collaborative projects has attracted additional funding support from government and community organizations.

Northern Gulf of Mexico Littoral Modeling Laboratory

A comprehensive Gulf coastal modeling system is being cooperatively developed by the Navy and EPA at the Northern Gulf of Mexico Littoral Modeling Laboratory. When complete, the modeling system will provide current and projected information about coastal environmental conditions that will not only advise TMDL development, but also inform future modeling efforts and give modelers new tools to forecast the movement and impact of algae blooms, whose shade poses a serious threat to coral reefs.

Healthy coral reefs depend on the interaction of land and sea. Responsible land management is an essential aspect of coral reef protection.

Point Loma, California Land Restoration Project

Erosion control is an important component of a land restoration project recently undertaken by the Navy and the Soil Ecology and Restoration Group (SERG) at San Diego State University. The two organizations are working to cost effectively restore disturbed land on Point Loma, CA, used by the military for 140 years and currently the site of five Navy commands. With SERG, the Navy is evaluating biodegradable erosion control methods to stabilize the slopes of Point Loma while plant regrowth occurs.

Vieques Range Facilities Puerto Rico

A 1996 update to the Vieques Land Use Management Plan (LUMP) (a GIS-based INRMP) identifies highly detailed natural features of the island of Vieques, PR, and incorporates them into the GIS. These map layers have been combined with known constraints, such as landing zones, gun locations, and operational areas, to produce an Overall Land Use Map. The specific purposes of the LUMP are to facilitate continued Navy training on Vieques while avoiding adverse impacts to the island's natural resources, and to avoid adversely impacting its coral reefs and other coastal resources. Mission training commanders are provided copies of the Vieques Land Use Map prior to training activities. By strictly defining operational areas, the map helps prevent adverse impacts to marine resources. The Navy is working cooperatively with the U.S. Geological Survey (USGS) Biological Resources Division to update the mapping of coral reefs and sea grass beds contiguous to Naval Station Roosevelt Roads, Isla Pineros, Cabeza de Parro, and Vieques. The Navy's priority is to use the most current mapping information in NEPA documents to ensure that operations do not negatively impact coral reefs and other marine resources.

Air Force Base (AFB) Wake Island, Pacific Ocean

AFB Wake Island, located in the tropical west central region of the Pacific Ocean, is ringed by coral reefs. Protection of coral reefs is being addressed in the Air Force installation's INRMP.

Wake Atoll, located 2000 miles west of Hawaii, has extensive coral reefs and abundant marine life. The atoll is made up of three islands that almost completely enclose a shallow lagoon. Since commercial fisheries are excluded and spearfishing is not allowed, Wake is one of the few reef systems that has abundant schools of the large bumphead parrotfish and Napoleon wrasses which have been over fished throughout most of their

Johnston Atoll, located 800 miles southwest of Hawaii, is an atypical atoll with four islands and six miles of emergent reef to the north. It is atypical because the atoll platform is tilted and slopes off the deep water to the south, which is the reason there is no emergent reef to the south. The main island of Johnston is pictured with the emergent reef in the foreground. Johnston has a sensitive and unique coral reef fauna that is a mix of species from Hawaii to the north and the Line Islands to the south. Even though the lagoon was dredged extensively in the 1960s to enlarge the main islands and build two additional islands, coral regrowth in some of these dredged areas is extensive.

Andersen AFB, Guam

About 12 miles of reef are located along Andersen AFB's northern shoreline. The coral extends from near-shore to an average distance of 600 meters away, forming a barrier reef that is included within the Guam National Wildlife Refuge. Andersen AFB gave extensive consideration to coral resources in developing its INRMP, which was implemented in 1998.

Pacific Missile Range Facility, Kekaha, Hawaii

A coral reef is located approximately 100 feet from this facility. The facility's INRMP, currently under development, will include measures to protect this reef.

Hickam AFB and Bellows Air Force Station (AFS), Hawaii

Both the Hickam AFB and Bellows AFS recreational areas contain limited areas of coral. The reef structure extends from near-shore waters to a distance of 400 meters offshore at Bellows. A single INRMP covers both installations and addresses reef characterization and protection.

Johnston Atoll

Approximately 6 miles of emergent reef occurs along the northern edge of the atoll. The lagoon contains extensive patch reefs. The atoll is co-managed as a National Wildlife Refuge by the U.S. Fish and Wildlife Service (USFWS) and the Air Force. The facility's INRMP, currently under development in cooperation with USFWS, will include measures to protect this reef.

The Napoleon wrasse, *Cheilinus undulatus*, is also called the truck fish because they get so large. These fish have become rare throughout most of their range due to high fishing pressures. However, they are extremely abundant at AFB Wake Atoll, an installation that does not allow fishing for reef fishes and excludes all commercial fisheries.

Section Five

DOD INITIATIVES TO ENHANCE CORAL REEF ECOSYSTEMS

Recognizing that more needed to be done for coral reefs and the marine ecosystem, the Department of Commerce and the Navy co-sponsored the National Ocean Conference in June 1998 in Monterey, CA, which fostered groundwork for new ocean policies and set the stage for the announcement of the Order. In keeping with this conference and other initiatives, DoD continues to demonstrate its commitment to coral reef ecosystem protection and overall environmental stewardship by funding projects and programs that could reduce impacts on coral reefs in the future. The following are some examples of conservation, outreach, and research initiatives that the Military Services have completed or that are in progress.

Conservation Initiatives

Coral Reef Protection Management Guidelines for DoD Vessels and Installations

The Navy is sponsoring a Legacy Program project to develop a management plan containing best management practices (BMPs) for vessels operating near coral reefs and to create a training protocol that will teach Navy personnel to implement necessary management measures. This project will also produce checklists that will be used during facility construction to maximize prevention of coral reef degradation. DoD ports and associated reef ecosystems will be surveyed and the reefs' use and condition considered so that priority areas can be identified and further measures to protect them can be developed.

Coral Reef Conservation Guide for the Military

The Coral Reef Conservation Guide for the Military Services was funded by the Legacy Program and produced to raise awareness within DoD of coral reef conservation. The guide provides basic information on coral reef ecosystems and discusses why their protection is important. It also provides an overview of DoD and U.S. laws and policies that pertain to coral reef ecosystem protection and enumerates DoD activities that have the potential to adversely impact coral reefs.

Sea Grass Bed Protection at John Pennekamp Coral Reef State Park, Florida

One of the earliest Coastal America partnership projects in which DoD participated was the effort to protect sea grass, an important coral reef ecosystem component, at John Pennekamp Coral Reef State Park in 1992 and 1993. Shallow water around the Florida Keys had rendered its sea grass habitat prone to propeller scarring by recreational boating traffic. Through a cooperative arrangement between the Navy, the Florida Department of Natural Resources, and NOAA, the Navy purchased and installed shallow water marker buoys around selected areas. Interpretative and educational materials about the need to protect sea grass habitat from propeller damage were placed at boat landings, dock areas, local marinas, hotels, and boat rental businesses in the Key Largo area. Based on the success of the program, similar projects were initiated elsewhere in the Keys and around Florida.

Coral Reef Assessment, Vieques Range Facilities, Puerto Rico

The Navy plans to conduct a comprehensive baseline study of Vieques reefs near the range to examine the location and extent of coral reefs, physical and biological characteristics, reef health, and status. Accurate mapping of Vieques reef locations, dimensions, bathymetry, and benthic composition has already been completed using digital ortho-photography, hyperspectral imagery, and marine Lidar. The Navy will conduct a detailed baseline assessment of reef characteristics and conditions using site-specific transect, quadrat, photographic, video, computer, and differential global positioning system techniques. Studies of sedimentation and fish populations will be conducted to evaluate effects of range activities on the surrounding coral reef ecosystem. This work will enhance our understanding of long-term natural variation in reef health and reef building, as well as the potential impacts of human activities.

Los Machos and Red Mangrove Restoration, Puerto Rico

To support the recovery and protection of coral reefs, the Legacy Program funded two mangrove restoration projects in 1992. Like sea grass beds, mangroves filter pollutants in runoff, increase coastal habitat, and, depending on proximity, protect coral reefs from hurricane damage. Between restoration efforts in the Los Machos and Red Mangrove Forests, over 1000 acres of mangroves were restored.

Coral Reef Protection Buoy Markers, U.S. Virgin Islands

As a willing and able partner in conservation, the Navy provides assistance, when its duties allow, on conservation projects not directly associated with its lands. For example, Naval Special Unit Four (NSWU 4) provided personnel and equipment to place four buoys for protection of a nearby reef off the coast of St. John, U.S. Virgin Islands, in November 1999. This assistance provided NSWU 4 a training opportunity in unfamiliar territory while saving the U.S. National Park Service more than $50,000.

Rapid Ecological Assessment of Coral Reefs, Guantanamo Bay Naval Station, Cuba

The Navy's Atlantic Fleet funded a project with the Nature Conservancy to complete a Rapid Ecological Assessment of the natural resources at Guantanamo Bay, Cuba. Included in this assessment are coral reefs, sea grasses, and adjacent mangroves. The assessment found that these coral reef ecosystems were in good condition compared to others in the Caribbean. This information is being incorporated into the installation geographic information system (GIS) and integrated national resource management plan (INRMP), and the data are available as baseline information for new National Environmental Policy Act (NEPA) documents. Recommendations provided by the Nature Conservancy were used as the basis for revising installation instructions relating to conservation initiatives, particularly fisheries management. The revisions include modifications to fisheries bag and size limits, seasonal species restrictions, and additional restrictions on spear gun fishing. Installation environmental and natural resources personnel have prepared, with the assistance of the Naval Facilities Engineering Command's Atlantic Division, a Natural Resources Program brochure for distribution to installation residents and visiting personnel. Installation natural resources staff also conduct coral reef and fisheries awareness training for all new personnel. The local dive club hosts periodic "eco-dives" to clean up trash and fishing lines on the coral reefs. The dive club, in cooperation with Navy Morale, Welfare, and Recreation Division (MWR), also established mooring buoys for divers and fishing boats to eliminate the potential for anchor damage to the coral reefs. Additional buoys are programmed for installation in 2000.

Reef Fish Species Inventory and Reef Community Assessment, Wake Atoll

Wake atoll is managed exclusively by DoD. It has been a U.S. military installation in operation since WWII and has weekly flights of dozens of trans-Pacific military aircraft. Recently, the Legacy Program funded a marine biological resource survey, which resulted in the documentation of 120 new records of fish species. This increases the number of reef fish species known to occur on Wake Atoll from 200 to the current total of 320. Species inventories will aid in the identification of sensitive or unique reef communities occurring near DoD installations.

A common reef fish, the sailfin tang, *Zebrasoma veliferum*, was only recently found to occur at Wake Atoll.

Coral Reef Baseline Mapping, Naval Station Roosevelt Roads, Puerto Rico

The Navy partnered with USGS Biological Resources Division to acquire baseline data on coral reefs contiguous to Naval Station Roosevelt Roads and outlying areas at Isla Pineros, Cabeza de Perro, and Vieques, Puerto Rico. The Navy is providing USGS with aerial photography to map and characterize the coral reefs. Adjacent sea grass beds and mangrove systems are also being mapped and characterized. These data are being digitized to update the installation GIS and will become part of the installation's INRMP. Once complete, information from these studies can be used in environmental assesment documents to ensure that future Naval operations do not adversely affect coral reefs. DoD Legacy Program funding is being sought to promote enhancement of a large mangrove system that will help protect adjacent coral reefs.

National Wildlife Refuge, Johnston Atoll

Johnston Atoll is a designated National Wildlife Refuge with on-island management of reef and seabird populations by the U.S. Fish and Wildlife Service (USFWS), Pacific Ecoregion. It is also the site of the Johnston Atoll Chemical Agent Disposal System (JACADS); the Air Force is the current property owner. The atoll encompasses a large, high-quality coral reef ecosystem. The reef is approximately 30,000 acres in size and is composed of 33 coral species.

Pacific Equatorial Atoll Research Laboratory (PEARL)

In 1993, the Army established the PEARL, a research facility on the atoll, to study rare and threatened species and marine resources, including coral. The research program is administered by the Boston University Marine Program. Scientific data obtained by this research facility are used by FWS and DoD managers for conservation management and planning of the Johnston Atoll military base. A list of publications and research reports is available at http://www-pmcd.apgea.army.mil/index.html

Brown boobies, like this pair, are among the 13 species of seabirds that nest on the four islands within Johnston Atoll National Wildlife Refuge.

Human encroachment on seabird habitat has reduced population numbers in other areas. However, seabird and shorebird populations on Johnston Atoll are healthy and have been increasing or stable.

Potential impacts of military operations at Johnston on the seabirds have been monitored by on island Fish and Wildlife personnel as well as scientists with the Ornithological Council over the last 15 years.

The atoll is co-managed by the Departments of Defense and Interior according to a 1976 Memorandum of Understanding. The USFWS maintains a presence on the atoll to advise the military and to monitor human activities and wildlife populations. During the past decade, both the Air Force and Army have embarked on several Legacy Program projects to promote public awareness and to enhance the protection of this valuable resource, without compromising mission capabilities:

Johnston Atoll Guidebook

The Army Legacy Program has produced a poster and guidebook of the area's marine flora and fauna to illustrate the natural history of rare and threatened species and military history on the atoll. These products were developed using data acquired during 17 years of DoD-sponsored research in support of the DoD mission on Johnston Atoll. The poster and guidebook will promote understanding of the fragile and unique biology of the atoll coral reef ecosystem.

Johnston Atoll
Permanent Mooring Systems

Most recently, in FY 2000, the Air Force and U.S. Fish and Wildlife Service jointly sponsored a Legacy Program project to protect the Johnston Atoll coral reefs by installing permanent moorings for recreational boats used by military and civilian personnel on the island. Recreation, particularly SCUBA diving and snorkeling, is an important aspect of the morale of residents on Johnston Atoll. Divers and snorkelers operate boats and dive rafts throughout much of the atoll, and may damage the fragile coral each time they drop anchor at a dive site. Marina records indicate that about 5,000 SCUBA dives plus numerous snorkeling excursions are made each year. To prevent such damage, permanent buoys were installed at the most popular dive sites around the atoll to reduce the potential for damage to coral reef habitat from recreational activities. These buoys have become a widely accepted management tool for marine parks and reserves, and have contributed significantly to the preservation of coral reefs by lessening the effects of recreational diving and boating activities. The local diving community's support of this project should serve to increase general public awareness of the crucial need for conservation measures for coral reef ecosystems worldwide and of Pacific Air Force's endorsement and participation.

Recreational divers using a permanent mooring line for a safety stop. Permanent mooring lines help protect fragile coral from damage due to anchors. At Johnston Atoll, 13 permanent moorings were installed at the most popular recreational dive locations. At Wake Atoll, there are five similar permanent moorings for recreational diving. These moorings also provide secure anchoring and avoids the risk of small boat anchors dislodging. Permanent moorings also provide locations for divers to adjust their gear and buoyancy before they reach the bottom and potentially damage coral.

Marine Preserve at Andersen Air Force Base (AFB), Guam

A FY 1992 Legacy Project laid the foundation for the establishment of the Andersen AFB Marine Preserve. The designation of the Preserve was a remarkable conservation undertaking that significantly enhanced coral reef habitat. The water off the north shore of Guam is a biologically rich and diverse area and is considered to be a major fisheries breeding area for local fishes. Following designation of the Preserve, graduate students and marine biologists conducted a baseline biological inventory and subsequently developed conservation techniques, based on additional monitoring and assessment results. Many project tasks are closely integrated with public education programs and the media to share data, findings, and management results to ensure full appreciation, understanding, and protection of coral resources. Coral reef protection at Andersen AFB has been an important factor in the recognition received by the installation and the Air Force, including the General Thomas D. White Award for Natural Resources Conservation and the DoD Natural Resources Conservation Award. In FY99, a second Legacy Project assessed the effects of ocean currents on the marine preserve to enhance resource management and conservation planning activities.

Natural Resources Management at Midway Atoll

Fifty years after the famous Battle of Midway, Midway Island is now the scene of peaceful efforts for environmental conservation. This small 5.2 km^2 area island attracts the largest population of laysan albatross, 16 species of seabirds (over two million birds), a variety of shore birds, the endangered Hawaiian monk seal and the threatened green sea turtle. Its clear lagoon waters, over 130 fish species, and coral reefs, attract snorkelers and SCUBA divers from around the world. In recent years, the USFWS selected the Naval Air Facility Midway to be used as a National Wildlife Refuge. Old environmental policies of the previous half-century had resulted in the need to remediate areas contaminated by lead-based paints, asbestos, fuels, and chemicals. The Navy began cleaning up this contamination in 1993 in order to prepare Midway Atoll for release, in conjunction with the EPA, FWS, and NMFS. The turnover was officially complete on June 30, 1997, and today, Midway Atoll is almost as clean as when the Navy first settled on the island in the 1930s.

Haputo Ecological Reserve Area (ERA) at Communication Master Station, Western Pacific, Finegayan

The Haputo ERA was established by the Chief of Naval Operations (CNO) on March 15, 1984, in cooperation with various Federal agencies and the Government of Guam. Haputo Beach lies within the boundaries of the Naval Communication Master Station, Western Pacific, Finegayan. An ERA is a physical or biological unit in which current natural conditions are maintained insofar as possible. The Haputo ERA supports healthy and diverse population of reef community fishes and associated invertebrates. The double reef at Haputo is one of Guam's few remaining examples of a healthy leeward fringing reef community, and provides a nursery for a great number of species having subsistence and commercial fishery value. The Navy, in cooperation with FWS, NMFS, and the Government of Guam, has conducted intensive surveys of the Haputo coral reefs and developed a management plan to provide guidance in their preservation and management. Regulations and recommended management actions provide for minimum interference by human activities with the ecological processes occurring within the ERA. The Haputo ERA, with both its terrestrial and marine units, is one of the largest nature preserves set aside on Guam for preservation and research purposes.

The endangered Hawaiian monk seal occurs in the Northwest Hawaiian Islands.

Rapid Ecological Assessment, Panama and Mangrove Restoration at Howard Air Force Base (AFB), Panama

The U.S. military had a major influence in the Republic of Panama since the building of the Panama Canal in the early 1900s. These lands are biologically diverse with at least 565 species of birds. Legacy Program funding contributed to a Rapid Ecological Assessment of the area, greatly adding to the data and knowledge base used to make informed decisions vital to the reuse of the area. The rich Panamanian coastal mangrove swamps generate approximately 30 million dollars per year from the shrimp and lobster industry. Years ago, 80 acres of the Howard AFB mangrove swamp was deforested, affecting the natural aquatic ecosystem. In the mid-1990s, a recovery project was implemented to protect this important ecosystem. Pipes were installed underneath the Approach Lights Maintenance Road to permit balanced water flow at both sides of the airfield, restoring the mangroves while ensuring safety and visibility for flight operations.

Diving Operation to Remove Marine Debris at Tern Island, French Frigate Shoals

Tern Island, part of French Frigate Shoals atoll about 500 miles northwest of Kauai, Hawaii, is a tiny 37-acre coral island. It was given to the FWS as a National Wildlife Refuge in 1979 after years of service as a military refueling and navigation station since before World War II. The Navy continues to maintain a role in keeping the island and the shoals healthy. Most recently, in 1998, a team of Navy divers participated in a two-week operation to remove derelict fishing nets and other marine debris from the reefs in the shoals. Five divers from the Naval Reserve Mobile Diving and Salvage Unit One Detachment 419 joined representatives from other Federal, State and county agencies and the private sector to successfully recover nearly 13,000 pounds of fishing nets and other debris contaminating the area. The French Frigate Shoals is one of the only large areas of shallow water in the mid-Pacific region. As a result, fishing nets and other trash that has been lost or abandoned frequently drift onto the reefs destroying the coral and threatening the endangered Hawaiian monk seal whose habitat includes this reef ecosystem. By helping make this cleanup successful, the Navy helped restore the health of this remote coral reef ecosystem and showed the power of teamwork.

Caribbean mangroves are important habitat for protecting coastlines from erosion, protecting reefs from sedimentation and as essential nursery habitat for the young of many marine organisms. They act as shelter for the juvenile grunts in this photo as well as other reef species. Silverside fish also find shelter in mangrove roots. Silversides are a major prey item for carnivorous reef fishes.

This debris field is mostly scrap metal that is left over from World War II. It remained on one remote beach of Wake Island until it was removed in 1999 by DoD.

Discarded or lost fishing nets pose a serious threat to marine life. Marine mammals, turtles, fishes and seabirds can become entangled, with little hope of escape. The nets also can smother and break coral.

Some marine debris contains hazardous materials. A diver takes a sediment sample next to this old transformer to determine if polychlorinated biphenyls (PCBs) had leaked into the environment. The transformer was later removed.

"Worm Rock" -Unique Habitat Considerations- Patrick AFB and Cape Canaveral AFS, Florida

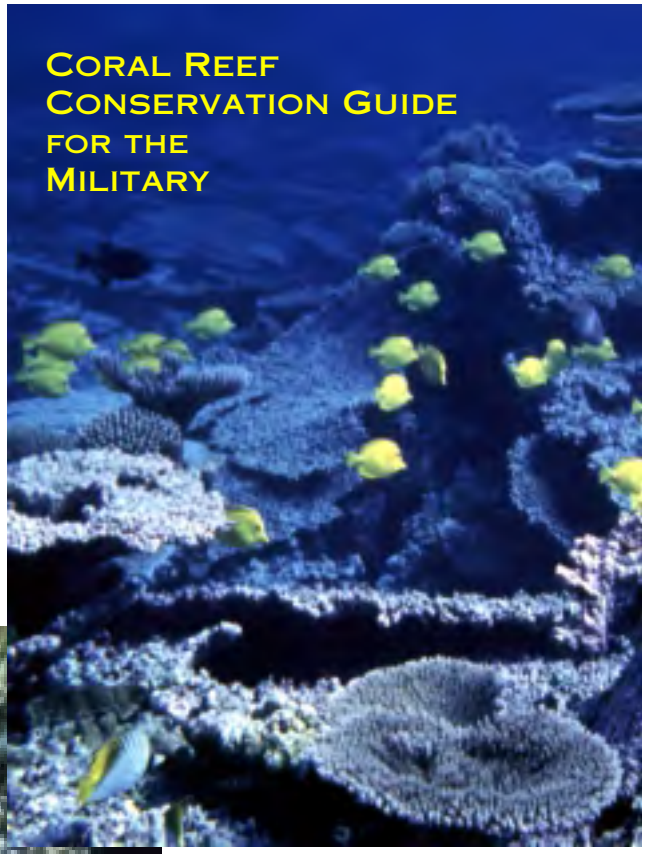
Although no coral reef areas are found in proximity to these installations, an offshore substrate known as "worm rock" provides a unique habitat, similar to coral reefs, for many invertebrate organisms. The protection of the "worm rock" is considered extensively in the installations' INRMPs. Various environmental impact statements (EISs) over the years, most recently for the Expendable Launch Vehicle, have incorporated ecosystem protection considerations for this mission-related action.

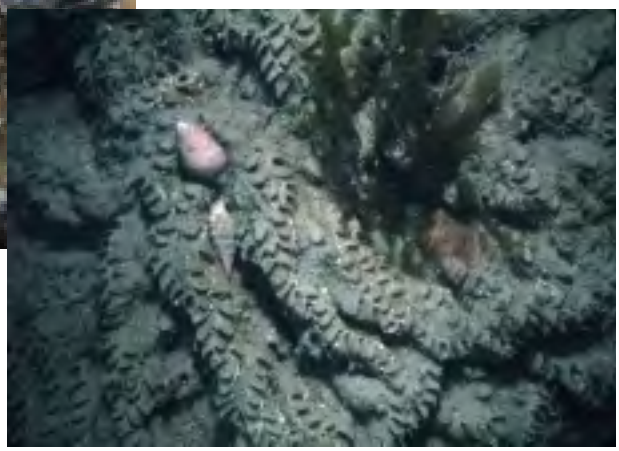
The Christmas tree worms below need hard substrate to grow on. The "tree" part of the worm filters the water for food and the rest of the body is in a hard tube excreted by the worm found within the live or dead coral that the worm lives on. Other types of worms, in some cases, create hard substrate themselves, which can then be colonized by multiple invertebrate organisms as shown in the photo of the "worm rock" (below lower right).

Outreach Initiatives

Coral Reef Conservation Guide for the Military

The Coral Reef Conservation Guide serves as a general outreach brochure to heighten awareness within DoD, to provide an overview of activities conducted by DoD that have the potential for adverse impacts on coral reef ecosystems, and to outline pertinent DoD and U.S. national laws and policies regarding coral reef protection. This guide serves as a major outreach accomplishment for DoD.





DoD's Coastal America Partnership-Waikiki Aquarium, HI

In addition to conducting site-specific activities aimed at protecting the coral reefs, DoD also participates in the Coastal America Partnership of Federal agencies that work together to address environmental problems impacting coastal ecosystems. In Hawaii, DoD is a partner with the Waikiki Aquarium, which is a designated Coastal Ecosystem Learning Center of the National Coastal America Partnership. The Waikiki aquarium is an active proponent of research and public education with respect to the problems threatening the long-term survival of coral reef ecosystems. A recent lecture series at the Waikiki aquarium addressed the increasing and widespread damage to coral reefs and discussed the role of public aquariums in finding solutions for sustaining coral reef resources.

Reef Cleanup at Marine Corps Base Hawaii (MCBH)

In Hawaii, "ghost nets" are a constant threat in Hawaii's near-shore waters. Averaging 300 feet in length, they drift in and impact reefs in three significant ways: (1) smother, entangle and kill the coral, (2) transport alien species from reef to reef, and (3) entangle other marine life, including protected species. Since 1998, MCBH has worked with State and community volunteers to remove over 5,000 pounds of net debris each year in Kane'ohe Bay alone. The Base's 4th Reconnaissance Company, a key MCBH participating unit, is thus allowed to practice their diving skills and perform a valuable community and environmental service as well. These cleanup activities are an annual Earth Day event.

"Adopt a Reef" Program at Moanalua Intermediate School

In a partnership with Moanalua Intermediate School under the CNO Personal Excellence Program, a Naval Oceanography officer from the Naval Pacific Meteorology and Oceanography Center saw an opportunity to educate school children about the environment and initiated a program to "Adopt a Reef." The program included periodic beach cleanups, a week in the classroom teaching environmental sciences with a focus on a presentation on "Marine Debris," student production of a "public service announcement" on marine debris, and participation in the International Coastal Cleanup/ "Get the Drift and Bag It Day."

Sport and Wildlife Handbook, Guantanamo Bay Naval Station, Cuba

Guantanamo Bay Naval Station issued the *" Outdoor Sport and Wildlife Handbook"* (COMNAVBASEGTMOINST 1710.10F) to personnel. This handbook provides wildlife harvesting regulations and restrictions to base personnel. In addition to providing lists of fish and wildlife species that are protected from harvesting, it also contains measures for the protection of coral reef ecosystems at Guantanamo Bay by prohibiting personnel from damaging or removing coral during recreational and other activities.

Ghost nets are lost or discarded fishing nets that continue to fish. Fish, turtles, mammals and birds become entangled and die in these nets. The net in the photo has become so entangled in coral that it is unlikely that any large animals would be at risk, but it has killed the coral.

Research Initiatives

Sediment Plume Modeling

Presently the Army Corps of Engineers is developing a numerical screening model, through the Dredging Operations and Environmental Research Program, designed to examine the movement and dynamics of sediment plumes. This research could be adapted to any number of ecosystems, including coral reefs, giving an indication of the type and duration of impacts to these ecosystems.

Coastal Benthic Optical Properties (CoBOP) Program

CoBOP is a five-year project initiated in 1997 by the Office of Naval Research to study the interaction of light with coral reefs, sea grasses, and associated marine sediments. This program proposes to correlate optical properties with biological, chemical, and physical processes associated with the shallow ocean floor. Collaboration is on-going between CoBOP and other DoD research and development programs concerned with remote sensing and underwater imaging.

The JASON Project

The JASON Project is sponsored by the JASON Foundation for Education, a unique partnership of scientific research facilities, private industry, museums, and educational institutions. The JASON Project, founded in 1989 following the discovery of the wreck of the *RMS Titanic*, is designed to enable students and teachers worldwide to take part in global explorations using advanced interactive telecommunications. The Naval Meteorology and Oceanography Command has cooperated with various hosts, such as the University of Southern Mississippi's Gulf Coast Research Laboratory, to provide some 60 hours of live interactive broadcasts from the JASON expedition site. Since 1993, the live JASON broadcasts have been experienced by thousands of students and teachers. The JASON project has conducted several coral reef evaluation and monitoring research initiatives to raise awareness about the value of coral reefs and the problems affecting them. Examples of such projects include experiments designed to determine the effects of increased ultraviolet light on coral and the occurrences of coral bleaching, and programs to monitor the health of individual corals over time and to monitor algae growth on coral reefs.

Biomonitoring at Kwajalein Atoll

A biomonitoring program developed by the U.S. Army Center for Health Promotion and Preventive Medicine evaluated the bioavailability of potential contaminants near marine discharges from the U.S. Army Kwajalein Atoll, Republic of the Marshall Islands. "Mussel Watch" methods traditionally used to assess regional status and trends were adapted to meet reef area conditions at Kwajalein Atoll. Hatchery-reared juvenile giant clams (*Tridacna maxima)* of a uniform size were air shipped to Kwajalein, acclimated for several days, and then deployed in anchored predator exclusion cages at seven sites off three islands within Kwajalein Atoll. Vessel mooring methods that reduce collateral damage to coral reefs were modified and scaled down to deploy caged clams at the shallow and high energy stations. After a three month exposure, clams were retrieved and shipped to a lab for contaminant analysis. Results identified several sites with elevated levels of some metals and these have been targeted for further impact evaluation. This type of biomonitoring approach may be useful at other coral reef sites. In this case, the selected genus Tridacna is symbiotic, like coral, and can also be used to help monitor coral reef health. The biomonitoring approach was more cost-effective and time-integrated than traditional water quality monitoring. Furthermore, the results provide information about the contaminant bioaccumulation potential, useful in assessing human health and ecological risk.

There are several species of giant clams found on Pacific reefs. *Tridacna crocea* is pictured on both pages. The differing colors are caused by symbiotic zooxanthellae and tissue pigments which vary among individuals. Giant clams are threatened because they grow slowly and have been overharvested as food. An aquaculture industry started with the intent of producing giant clams for food, found it more profitable to sell small clams to the aquarium trade. Giant clams are also being used as biomonitoring tools, as mussels are used in the Mussel Watch Program, to measure bioavailability of contaminants at polluted sites.

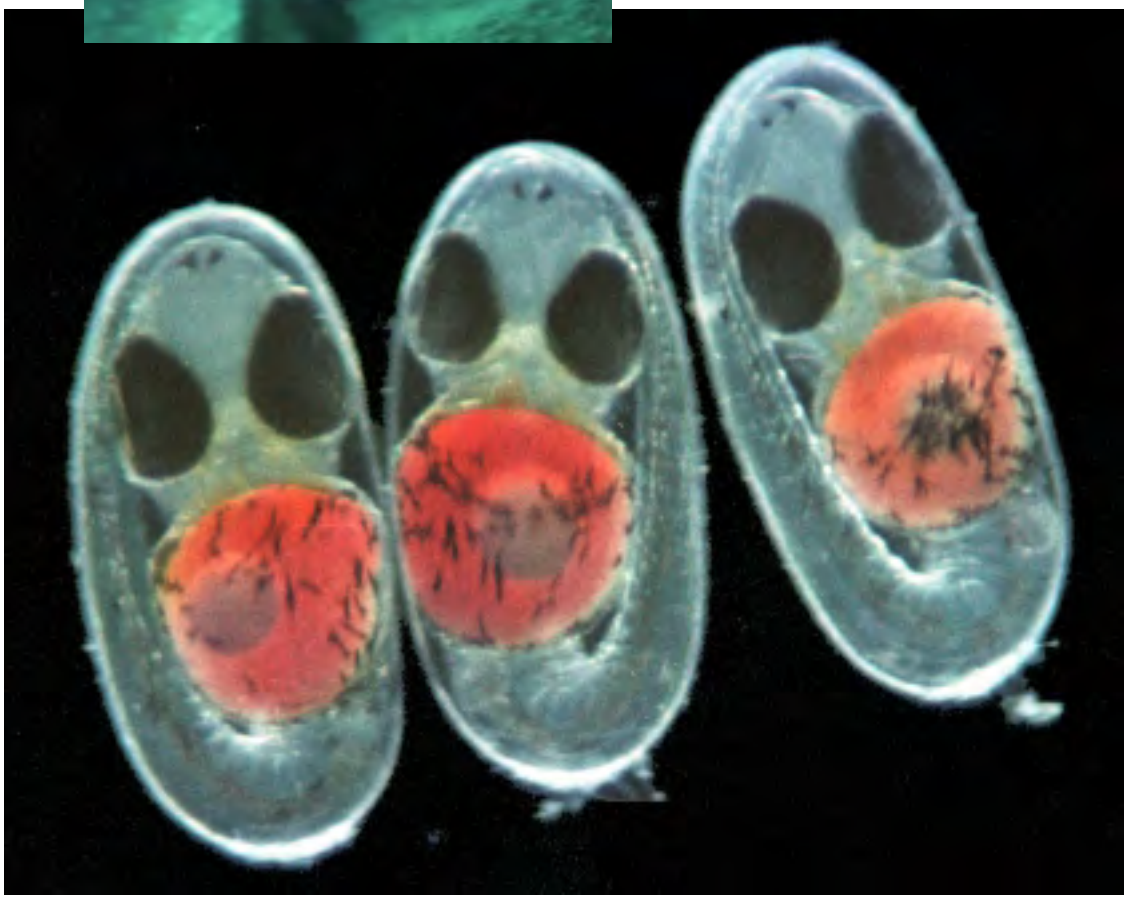
Biomonitoring at Johnston Atoll

A biomonitoring program using reef fish development to detect anthropogenic impacts was developed with collaborative funding by the Program Manager for Chemical Demilitarization (U.S. Army), U.S. Air Force, Pacific Command, and the U.S. Coast Guard. This method involves monitoring populations of damselfish, spawning in the field, in areas that are potentially "impacted" by chemical contamination as compared to "non-impacted" areas. This method measures both reproductive and developmental parameters which are among the most sensitive to chemical pollution. The blackspot sergeant major damselfish, a common fish found on reefs throughout the Indo-Pacific is used as the "indicator" organism for two reasons: 1) it has a high potential for exposure to contaminants through its diet, and 2) it lays eggs in a conspicuous nest that is easy for divers to monitor and sample. This species seems to "prefer" artifical structures for its nesting sites and can be found spawning on pier pilings, cement blocks, and even in old 55 gallon drums. Samples of fertilized eggs (embryos) are collected from the field and quantitatively examined for developmental defects. The level of developmental effects is correlated with the level of environmental contamination. The method of examining fish embryos for developmental defects and relating the level of effects observed to contamination has been used extensively in temperate habitats. However, this is the first application of this technique in tropical environments. Most importantly, this monitoring method is relatively "low tech" and only requires a good quality microscope. This particular damselfish has close relatives on reefs in the Caribbean so similar monitoring could be conducted there as well. Current work includes expanding the embryo monitoring to other reef fish species.

This method is listed as one of the diagnostic monitoring/biocriteria tools available for coral reefs at: www.epa.gov/owow/oceans/coral

Left- Adult male blackspot sergeant major damselfish, *Abudefduf sordidus*.

Below - Five day old damselfish embryos.



Most coral reef fishes have a larval life stage where they develop in the open ocean before returning to the reef as juveniles. Once these embryos hatch, the 3 mm long larvae will spend at least 20 days in the open ocean.

The early life stages of coral reef animals (embryos and larvae) are extremely sensitive to environmental changes including chemical pollution.

Artificial Reef Creation, Various Locations

Research has shown that man-made structures, such as obsolete vessels and oil rigs, will, over time, create a simulated reef environment, thereby taking pressure off of natural reefs. These artificial reefs attract bottom-dwelling sea creatures, serve as nurseries for small fish, create hiding places for adults, and thus increase the number of aquatic species. Since most reef programs are operated at the State level, creation of new artificial reefs are coordinated with State authorities (having jurisdiction over the waters into which the artificial reef will be created) as well as EPA and NOAA/NMFS. Artificial reef construction by DoD includes the following:

Left: Soldierfish, *Myripristis berndti*, a prized sport fish, sheltering within the hold of the wreck pictured below.

Bottom: The wreck of the Stoner, a fuel ship, lies directly outside the small boat harbor at Wake Atoll. Even though the wreck is relatively young, corals and other invertebrates have already started growing on it providing additional habitat.

REEF-EX

The Defense Logistics Agency (DLA) Reef Exercise (REEF-EX) Program, in coordination with the U.S. Army and Navy Reserves established an innovative method for reusing surplus military armored vehicles (MAVs). The REEF-EX program involved three major steps: cleaning and preparation of the vehicles; land transportation to reef staging areas; and the marine placement of the MAVs on permitted reef sites in cooperation with local programs. These activities were subsidized by DoD, although siting, permitting, and marking support was handled by reef program cooperators. Preparation involved demilitarization and cleaning to meet established environmental standards. These efforts removed all potentially hazardous items and any significant amounts of environmental contaminants before deployment as reef materials. Preparation also included efforts to enhance the MAVs as reef habitat by removing or securing hatches and access panels in open positions to improve water circulation and fish access. All REEF-EX materials were placed on reef sites permitted by existing State, county, or city programs. Reefs were built in New York, New Jersey, Delaware, Maryland, Virginia, South Carolina, Georgia, Florida, Alabama, and Louisiana. These reefs provide additional fish habitat and diving sites. The Army is currently monitoring MAV reefs and comparing their performance to artificial reefs constructed from other materials.

Cooperation with State Programs–Ft. Lauderdale, Pompano Beach, and St. Augustine, Florida

The Navy successfully created an artificial reef off the coast of Ft. Lauderdale, FL, where the Naval Surface Warfare Center sank a Range Support Boat-1 (RSB-1) for the Broward County Artificial Reef program. Before the ship was sunk, it was stripped and cleaned according to standards established by the EPA and NOAA/NMFS. Then, with oversight by the State of Florida, Broward County, and Navy explosive ordnance specialists, the RSB-1 was sunk off of Pompano Beach, FL. Following a similar request and process from the State, the Navy created an artificial reef off the coast of St. Augustine, FL, with 33 A-6 Intruder aircraft.

Diving Opportunities–Key Largo, Florida & Oahu, Hawaii

The Navy successfully created an artificial reef in Key Largo in 1987 by sinking two World War II sister ships. Both ships have become one of the world's most popular wrecks for diving, visited by over 40 thousand divers each year. Over the years, these ships have, in effect, become a coral reef, providing habitat for many species of plants and fish and providing recreational divers an opportunity to dive in an area other than the Key Largo natural reef. The commercial popularity of this artificial reef has provided much needed relief to the natural Key Largo reef from the thousands of divers that come to the area every year.

On March 13, 1998, the Hawaii Department of Land and Natural Resources led a combined effort with the Navy and NMFS to add a 110-foot long World War II era Navy cargo-transport barge to the State's Moanalua Artificial Reef located 1.5 nm off the coast of Kahala near Hawaii Kai, just west of Diamond Head. Using the tugboat *Neodesha* (YTB 718), the cargo-transport barge was towed from its location at the Naval Magazine Lualualei's West Loch dock to the artificial reef site where it was anchored and sunk by removing wooden/foam plugs from holes previously cut into the hull. The holes will later provide easy, safe passage for recreational divers and fauna. The Navy and the State of Hawaii inspected and cleaned the antiquated barge prior to transport to ensure it was an environmentally safe addition to the coral reef ecosystem. This combined effort was coordinated for more than three years by the Explosive Ordnance Disposal Training and Evaluation Unit One.

Artificial reefs can also be made from materials including pipe and cement as in this photo. Artificial reefs can potentially increase habitat and provide shelter for particular life stages of invertebrates, fishes and other organisms in areas where there was no habitat to begin with. These sort of artificial reefs have been proposed to help rebuild fisheries in areas where destructive fishing methods have destroyed the natural reef.

Fisheries Conservation Areas–Oahu, Hawaii

The Navy assisted the State of Hawaii with expanding artificial reefs. Three landing craft were sunk off Oahu on October 7 and 8, 1997, to increase the size of Hawaii's artificial reefs. The reefs are being created by the State Department of Land and Natural Resources (DLNR) to establish fish habitats in areas where the seafloor is barren. According to DLNR, "artificial reefs give the State another opportunity to increase the sustainability of Hawaii's marine species." The Pearl Harbor Naval Shipyard (PHNSY) donated the vessels and worked closely with the Hawaii Department of Health to ensure the vessels were environmentally friendly before the Navy towed the vessels to sea. This assurance included a rigorous inspection to ensure the absence of polychlorinated biphenyls (PCBs), mercury, lead, petroleum products, and asbestos from the vessels as well as steam cleaning of fuel tanks. After the vessels were certified by the State, they were moved to select sites off Kahala, located on the south side of Oahu and at Maile Point on the leeward side of the island. Once the vessels reached their destinations, Navy divers from the Mobile Dive and Salvage Unit 1 positioned the vessels over the existing artificial reefs and removed plugs to allow water into the crafts. This cooperative effort between the State of Hawaii and the Navy was initiated by the PHNSY who contacted the State to determine if they had an interest in using the vessels. After government regulations were met, the project was given the "green light." The landing craft were sunk in about 85 feet of water.

In addition to providing habitat for fishes and invertebrates, wrecks are a source of fascination for recreational divers. Even this small tugboat in the lagoon of Johnston Atoll, attracts numerous divers.

Like this wrasse, all coral reef organisms are looking to the members of the Coral Reef Task Force, participating agencies, non-governmental organizations (NGOs), and the public for protection.

Section Six

LOOKING TOWARD THE FUTURE... DOD CONTINUES TO IMPLEMENT CORAL REEF PROTECTION MEASURES

Although guided by a number of Federal laws and regulations, EOs, and internal policies and procedures, the driving force behind DoD's commitment to protection and enhancement of coral reef ecosystems is a basic conservation ethic to be good stewards over the lands and waters we hold in trust for the American people. DoD has a long conservation history that has evolved into a successful ecosystem management program, integrated with mission requirements, ensure that critical and unique resources such as coral reefs are protected. As we enter the 21st century, DoD will continue to be an exemplary "Steward of the Seas" as we strive to support and promote the spirit and intent of Executive Order 13089 as a responsible Federal Agency, Natural Resources Trustee, and member of the U.S Coral Reef Task Force.

It is DoD's commitment to use its existing authorities to identify, preserve, protect and enhance coral reef ecosystems within available resources and consistent with mission requirements.

✧ DoD will continue to actively participate as a member of the Coral Reef Task Force and to join Federal partners in their efforts to protect coral reef ecosystems.

✧ DoD will continue to utilize its authorities to protect and conserve coral reef resources.

✧ DoD will provide outreach opportunities to enhance awareness and foster an environmental ethic with regard to coral reef ecosystem protection within the Department and the surrounding communities.

✧ DoD will continue to seek opportunities to research, monitor, and restore coral reef ecosystems.

✧ DoD will continue to seek funding through existing sources to sponsor projects and programs to support the following coral reef protection measures:

❖ Protect and enhance coral reef ecosystems and values.

❖ Develop and implement Integrated Natural Resources Management Plans that ensure protection of coral reefs where appropriate.

❖ Manage other areas under DoD control to include related sea grass beds, coastal mangrove forests and uplands, designated marine protected areas, and essential fish habitat to further protect coral reefs.

❖ Survey, inventory, map, and monitor coral reef locations as appropriate, to provide planning level information and data necessary to meet operational requirements.

❖ Provide training opportunities for DoD personnel involved in coral reef protection.

❖ Conduct education and outreach on the importance of coral reef ecosystems.

On-going and future projects to meet these commitments include:

Coral Reef Protection Management Guidelines for DoD Vessels and Installations

The Navy is sponsoring a Legacy-funded project to develop a management plan containing best management practices (BMPs) for vessels operating in proximity to coral reefs and training protocol for personnel to implement such measures. This project will also develop checklists to be used during facility construction to maximize protection of coral reef ecosystems. DoD ports and associated reef ecosystems will be surveyed to identify priority areas, based on significant use and/or sensitive reef conditions, to develop further project recommendations to protect coral reefs.

Coral Reef Assessment and Training

Navy divers will have training opportunities to develop general awareness of sensitive coral reef areas when working on construction projects or demolition so that potential impacts to reef ecosystems can be avoided and minimized. Additionally, Navy divers associated with the Underwater Inspection Program, administered by Naval Facilities Engineering Service Center and the Navy's Mobile Diving and Salvage Unit(s), may assist in research efforts to assess the general condition of coral reefs in proximity to DoD installations/operational areas. Personnel from Boston University Marine Program will conduct surveys of installation and operational areas for general reef condition to assist the military in prioritizing future projects to protect and restore coral reefs. This project is being funded through the Legacy Program.

Outreach & Education Initiatives

✧ The ***DoD Coral Reef Protection Implementation Plan*** will serve to create awareness and outline legal responsibilities, policies, and procedures for installation or operational use. It will serve as the primary document to obtain a consolidated listing of DoD and service instructions, generate ideas for stewardship initiatives, and outline a plan for sound environmental actions. Military Services should use this plan to help ensure safe and environmentally responsible actions for military operations and training in and around coral reefs. This information will be available on the Defense Environmental Exchange Network (DENIX on the Web) at http://www.denix.osd.mil.

✧ The ***Coral Reef Conservation Guide for the Military*** (discussed under Conservation Initiatives) will continue to be made available on DENIX for military and public awareness of DoD policy and programs for coral reef protection.

✧ DoD will continue to sponsor the ***Natural Resources Compliance Course***, an Inter-Service Environmental Education Review Board approved course, which is offered through Navy's Civil Engineer Corps Officers School (CECOS) to provide a training opportunity to natural resources managers and other DoD personnel. This training includes a session to educate participants of DoD/Federal agency responsibilities related to the Order. For more information on this course, visit the web address at http://www.cecos.navy.mil.

Top - A small hermit crab lets coral grow around its body, instead of using a shell for protection.

Left - Potter's angelfish only occurs in Hawaii and at Johnston Atoll.

Right - The candy cane goby lives symbiotically with a shrimp.

Summary

"The Department of Defense (DoD) recognizes coral reefs and related endemic ecosystems (mangroves and sea grass beds) as biologically rich and diverse habitats and gives a high priority to their protection."

— from the Department of Defense Policy Statement on Coral Reefs

Coral reef ecosystems are valuable assets that provide food, jobs, recreation, protection from storms, and billions of dollars of revenue each year to local communities and national economies. Yet, coral reefs are both beautiful and fragile resources that must be treated with respect and great care. This implementation strategy is intended to instruct military forces that they must minimize the potential for adverse impacts to coral reefs when conducting their operations in these sensitive areas. Whether during military exercises and training, daily operational procedures, diving, anchoring, or managing ballast water, the military must be conscious of its responsibilities under EO 13089. Through sound environmental practices such as knowing the resources, planning carefully, and avoiding sensitive ecological areas when possible, DoD can continue its operations while fulfilling its stewardship responsibility.

Beyond the policies, authorities, and mandates explained here, additional information on coral reefs is available through the Internet at:

http://coralreef.gov/
http://www.coralreef.noaa.gov/
http://www.epa.gov/owow/oceans/coral/

APPENDIX A

DoD Coral Reef Protection Implementation Plan
Legal Authority and Related Legislation

Sikes Act, 16 USC §§670a-670o. The Sikes Act directs the Secretary of Defense to carry out a program for the cooperative development and implementation of integrated natural resource management plans to provide for the conservation and rehabilitation of fish, wildlife, and plans on military installations.

National Environmental Policy Act (NEPA), 42 USC §§4321-4347. NEPA directs Federal agencies to use a systematic, interdisciplinary approach that will ensure that natural resources are given proper consideration in planning Federal actions. Under the Act, Federal agencies are required to prepare detailed environmental impact statements for any major Federal action undertaken within the U.S. or U.S. territorial sea significantly affecting the environment.

Coastal Zone Management Act (CZMA), 16 USC §§1451-1465. The CZMA establishes a Federal grant program to encourage coastal states to develop and implement coastal zone management programs. Specific emphasis is placed on development and implementation of nonpoint source pollution management efforts to restore and protect coastal waters. Federal activities that impact coastal zones must be consistent with enforceable policies of approved state programs to the maximum extent practicable. The Act also establishes the national estuarine reserve system.

Act to Prevent Pollution from Ships, 33 USC §§1901-1912. As amended by the Marine Plastic Pollution Research and Control Act, this Act requires all U.S. ships, and all ships in U.S. navigable waters or the exclusive economic zone, to comply with the International Convention for the Prevention of Pollution from Ships (MARPOL). Annex V of the Convention prohibits the disposal of plastics and other garbage into the ocean. For DON, the Act establishes deadlines for surface ship and submarine plastic discharge termination and special area compliance.

Clean Water Act (CWA), 33 USC §§1251-1387. The CWA is major Federal legislation that provides for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters. It establishes the National Pollutant Discharge Elimination System permitting program for point sources, and the Dredge and Fill Permit Program to regulate discharge of dredge and fill material into navigable waters and waters of the United States.

National Invasive Species Act (NISA), 16 U.S.C. §§4701-4751. The NISA reauthorizes and amends the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 to prevent and control the unintentional introduction of the zebra mussel and other aquatic nuisance species into waters of the United States through ballast water management and other control methods. Section 4713 of the NISA also established the Armed Forces Ballast Water Management Program, which required DoD to implement a ballast water management program for DoD vessels in order to minimize the risk of introduction of non-indigenous species from ballast water releases.

Pollution Prevention Act (PPA), 42 USC §§13101-13109. The PPA establishes national policy for the prevention and source reduction of pollutants, whenever possible. Under the Act, pollution that cannot be prevented should be recycled in an environmentally sound manner.

Uniform National Discharge Standards, 40 CFR part 1700. This regulation establishes uniform national discharge standards that apply to discharges, other than sewage, incidental to the normal operation of vessels of the Armed Forces. Incidental discharges include effluent from the normal operation of vessel systems or hull protective coatings, but do not include such things as emergency discharges, air emissions, or discharges of trash. These regulations apply to 39 types of vessel discharges and determine which of those discharges require control through the use of marine pollution control devices (MPCDs). A MPCD is any equipment or management practice installed or used onboard a vessel to control a discharge.

Oil Pollution Act of 1990 (OPA), 33 U.S.C. §2701 *et seq.* OPA revises the FWPCA and other statutes to

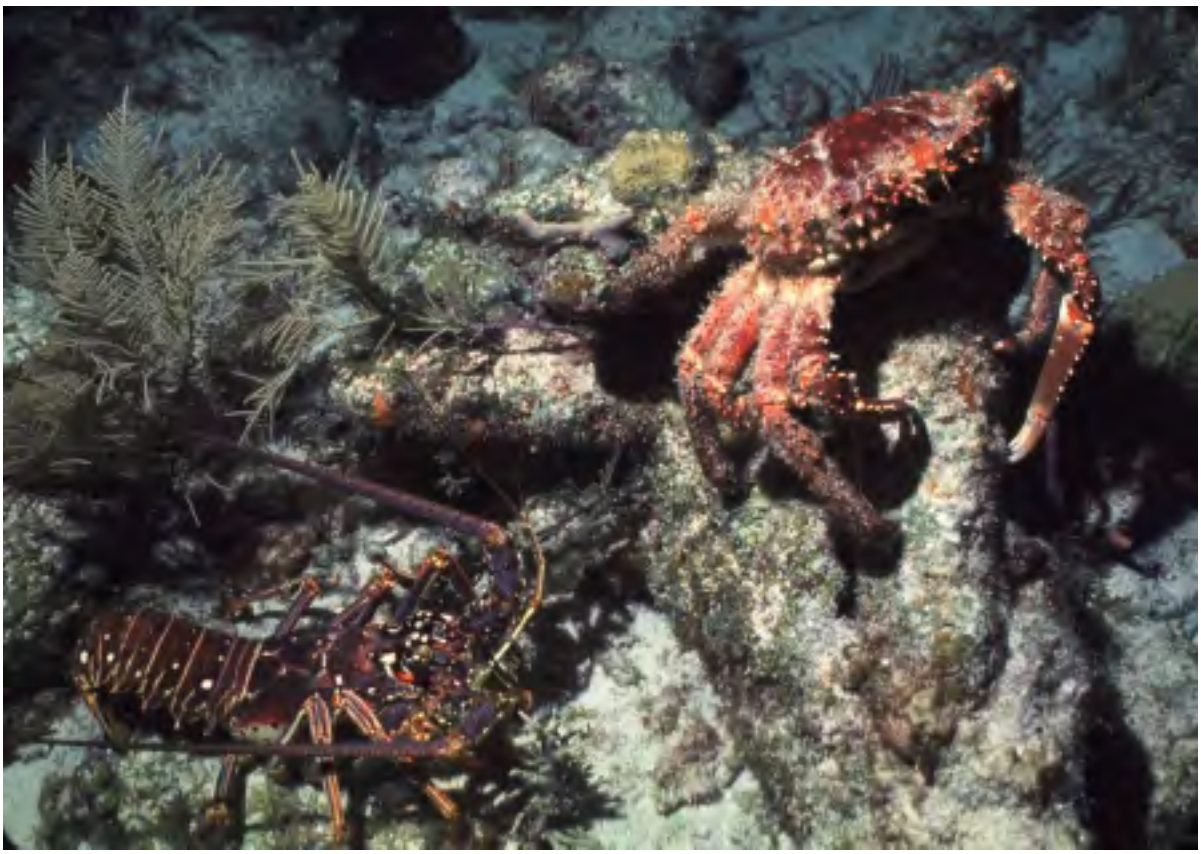
strengthen the National Response System, clarify Federal response authority, increase penalties for spills, require tank vessel and facility response plans, and provide for additional prevention and preparedness measures in designated areas.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. §9601 *et seq*. CERCLA authorizes the Federal government to compel persons to clean up sites contaminated by hazardous substances. It also contains provisions to make responsible parties liable for the costs of cleanup, and the creation of the hazardous substance Superfund. The Act imposes liability for the cleanup on responsible parties and requires them to perform the cleanup, reimburse others for their cleanup expenses or reimburse the Fund when the Fund is used to pay for cleanup. It also requires that responsible parties pay damages to the Federal, State or tribal government for the destruction or loss of, or injury to, natural resources.

Emergency Planning and Community Right-to-Know Act (EPCRA), 42 U.S.C. §§11001-11050). EPCRA establishes programs to provide the public with information on hazardous and toxic chemicals in their communities and established emergency planning and notification requirements to protect the public in the event of a release of extremely hazardous substances.

Resource Conservation and Recovery Act (RCRA), 42 U.S.C. §§6901-6992k. RCRA requires comprehensive cradle-to-grave regulation of hazardous waste and authorizes environmental agencies to order the cleanup of contaminated sites. The Act also encourages recycling and reuse of solid waste and requires hazardous waste generators and treatment, storage, and disposal facility owners to implement programs to reduce the volume of waste generated and minimize its threat to health and the environment.

Marine Protection, Research, and Sanctuaries Act (MPRSA), 16 USC §§1431-1445a. MPRSA authorizes the Secretary of Commerce to designate and manage marine areas of national significance as marine sanctuaries. This Act also regulates the dumping of material from outside the U.S. into a territorial sea or the contiguous zone of the U.S., and transportation of material from the U.S. for dumping into ocean waters.



The Caribbean spiny lobster and spider crab are usually only seen out at night.

Magnuson-Stevens Fishery Conservation and Management Act, 16 USC §§1801-1882. This Act conserves ocean fishery resources and manages fishing within the exclusive economic zone, anadromous fish throughout their migratory range, and fish on the Continental Shelf. It establishes eight Regional Fishery Management Councils responsible for establishing fishery management plans and identifying essential fish habitat.

Water Resources Development Act, 33 U.S.C. §§2201-2330. This Act authorizes the construction or study of 270 U.S. Army Corps of Engineers projects. It applies to all features of water resources development and planning, including environmental assessment and mitigation requirements.

Endangered Species Act (ESA), 16 USC §§1531-1544. ESA provides a program for the conservation of species of fish, wildlife, and plants that are listed as threatened or endangered in the U.S. or elsewhere. It also allows for the implementation of recovery plans and designation of critical habitat for listed species. The Act also prescribes procedures for Federal agencies to follow when taking actions that may jeopardize listed species.

Executive Order 13089, "Coral Reef Protection" (11 Jun 99). EO 13089 requires Federal agencies whose actions may affect coral reef ecosystems to identify their actions that may affect U.S. coral reef ecosystems; utilize their programs and authorities to protect and enhance the conditions of such ecosystems; ensure that actions they fund and carry out will not degrade such ecosystems, and provide for the implementation of measures needed to research, monitor, manage, and restore affected ecosystems.

Executive Order 13112, "Invasive Species" (3 Feb 99). EO 13112 requires Federal agencies to prevent the introduction of invasive species and to restore native species. It also establishes a Federal Interagency Invasive Species Council, co-chaired by the Secretaries of Interior, Agriculture, and Commerce and includes representatives from the Departments of State, Treasury, Defense, and Transportation and EPA.

Executive Order 12856, "Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements" (3 Aug 93). EO 12856 requires Federal agencies to comply with the requirements of the Pollution Prevention Act of 1990 and the Emergency Planning and Community Right-to-Know Act. It requires Federal agencies to adopt voluntary goals for reduction of toxic releases, report toxic chemical releases under the Toxic Release Inventory program, reduce pollution sources, develop facility P2 plans, and integrate P2 into acquisition and procurement efforts, and include environmental considerations into life cycle cost decisions.

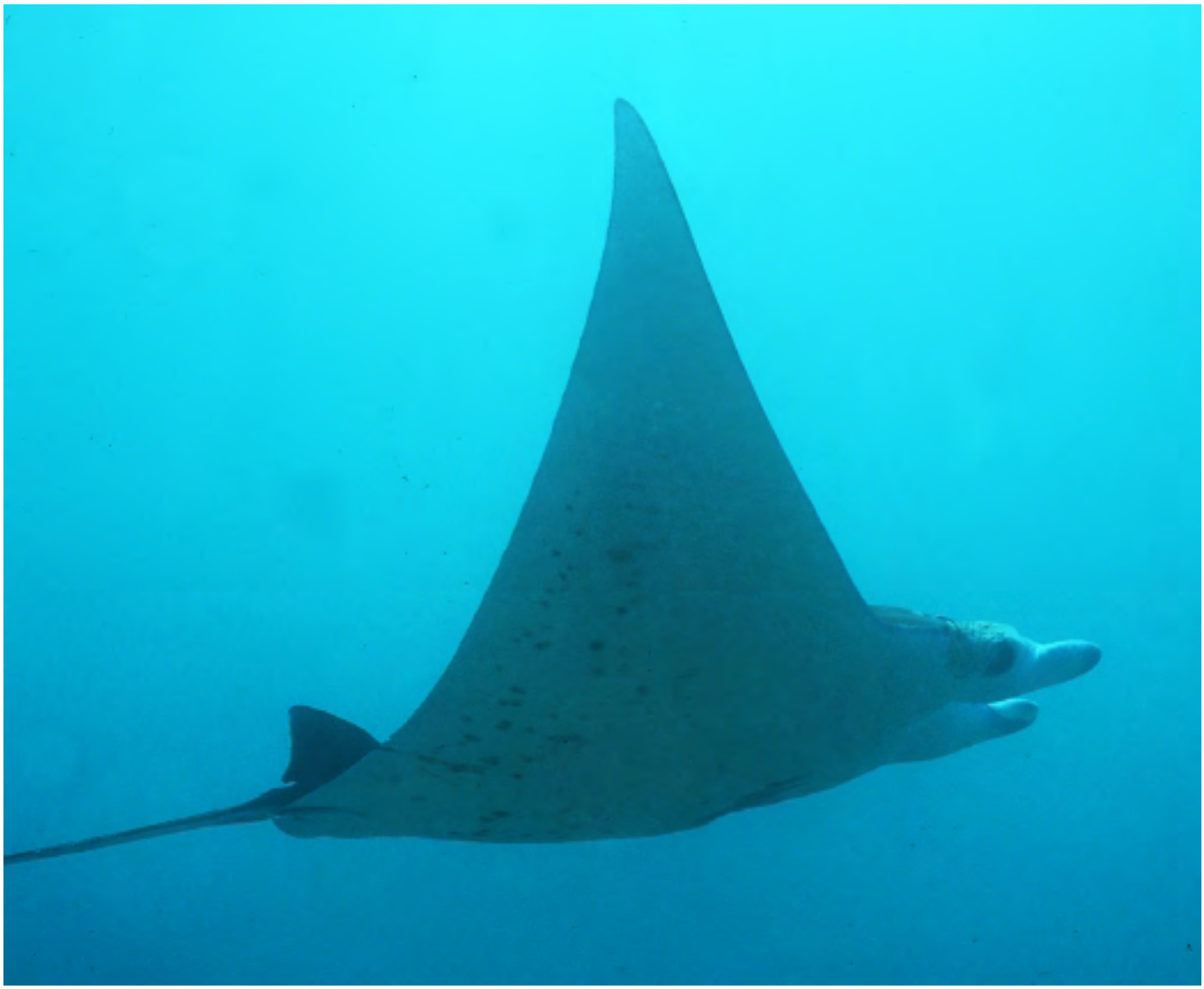
Executive Order 12114, "Environmental Effects Abroad of Major Federal Actions" (4 Jan 79). EO 12114 requires environmental study, under delineated circumstances of actions proposed to be undertaken outside the geographical borders of the United States or beyond the U.S. territorial sea. Under this EO, the military considers the effects of proposed major activities or major exercises conducted in such areas.

Executive Order 12580, "Superfund Implementation" (23 Jan 87). EO 12580 delegates various responsibilities assigned to the President under the CERCLA to various Federal agencies, including DoD. Under this delegation, the Secretary of Defense through the Secretaries of the Military Departments serve as a Natural Resources Trustee for "land, fish, wildlife, biota, air, water, drinking supplies, and other such resources" such as U.S coral reefs. As a Natural Resource Trustee, DoD must take appropriate actions, after notification or discovery of a natural resource injury, loss or threat, to conduct preliminary surveys and, if needed, carry out a plan for the restoration, rehabilitation, replacement or acquisition of equivalent natural resources.

Executive Order 13158, Marine Protected Areas (26 May 00). EO13158 strengthens and expands the U.S.'s system of marine protected areas (MPAs) to protect the significant natural and cultural resources within the marine environment. Some of these MPAs may include coral reef ecosystems. Under this EO 13158 EPA, relying upon existing CWA authorities, will propose new science-based regulations, as necessary, to ensure appropriate levels of protection for the marine environment. Such regulations may include the identification of areas that warrant additional pollution protection and the enhancement of marine water quality standards. In addition, similar to the Coral Reef EO, each Federal agency whose actions affect the natural and cultural resources that are protected by an MPA will have to identify such actions, and make public annually a concise description of actions taken by it in the previous year to implement this order. As this Order is implemented, the military, to the extent permitted by law and to the maximum extent practicable, shall avoid harm to the natural and cultural resources protected by an MPA.

APPENDIX B

Text of Executive Order 13089



A manta ray at Johnston Atoll. Very little is known about manta ray life history and ecology. DoD protected reefs provide safe haven to species which otherwise would be overfished.

Federal Register
Vol. 63, No. 115
Tuesday, June 16, 1998

Presidential Documents

Title 3—

The President

Executive Order 13089 of June 11, 1998

Coral Reef Protection

By the authority vested in me as President by the Constitution and the laws of the United States of America and in furtherance of the purposes of the Clean Water Act of 1977, as amended (33 U.S.C. 1251, *et seq.*), Coastal Zone Management Act (16 U.S.C. 1451, *et seq.*), Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801, *et seq.*), National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321, *et seq.*), National Marine Sanctuaries Act, (16 U.S.C. 1431, *et seq.*), National Park Service Organic Act (16 U.S.C. 1, *et seq.*), National Wildlife Refuge System Administration Act (16 U.S.C. 668dd-ee), and other pertinent statutes, to preserve and protect the biodiversity, health, heritage, and social and economic value of U.S. coral reef ecosystems and the marine environment, it is hereby ordered as follows:

Section 1. *Definitions.* (a) "U.S. coral reef ecosystems" means those species, habitats, and other natural resources associated with coral reefs in all maritime areas and zones subject to the jurisdiction or control of the United States (e.g., Federal, State, territorial, or commonwealth waters), including reef systems in the south Atlantic, Caribbean, Gulf of Mexico, and Pacific Ocean. (b) "U.S. Coral Reef Initiative" is an existing partnership between Federal agencies and State, territorial, commonwealth, and local governments, nongovernmental organizations, and commercial interests to design and implement additional management, education, monitoring, research, and restoration efforts to conserve coral reef ecosystems for the use and enjoyment of future generations. The existing U.S. Islands Coral Reef Initiative strategy covers approximately 95 percent of U.S. coral reef ecosystems and is a key element of the overall U.S. Coral Reef Initiative. (c) "International Coral Reef Initiative" is an existing partnership, founded by the United States in 1994, of governments, intergovernmental organizations, multilateral development banks, nongovernmental organizations, scientists, and the private sector whose purpose is to mobilize governments and other interested parties whose coordinated, vigorous, and effective actions are required to address the threats to the world's coral reefs.

Sec. 2. *Policy.* (a) All Federal agencies whose actions may affect U.S. coral reef ecosystems shall: (a) identify their actions that may affect U.S. coral reef ecosystems; (b) utilize their programs and authorities to protect and enhance the conditions of such ecosystems; and (c) to the extent permitted by law, ensure that any actions they authorize, fund, or carry out will not degrade the conditions of such ecosystems.

(b) Exceptions to this section may be allowed under terms prescribed by the heads of Federal agencies:

(1) during time of war or national emergency;

(2) when necessary for reasons of national security, as determined by the President;

(3) during emergencies posing an unacceptable threat to human health or safety or to the marine environment and admitting of no other feasible solution; or

(4) in any case that constitutes a danger to human life or a real threat to vessels, aircraft, platforms, or other man-made structures at sea, such as cases of *force majeure* caused by stress of weather or other act of God.

Sec. 3. *Federal Agency Responsibilities.* In furtherance of section 2 of this order, Federal agencies whose actions affect U.S. coral reef ecosystems, shall, subject to the availability of appropriations, provide for implementation of measures needed to research, monitor, manage, and restore affected ecosystems, including, but not limited to, measures reducing impacts from pollution, sedimentation, and fishing. To the extent not inconsistent with statutory responsibilities and procedures, these measures shall be developed in cooperation with the U.S. Coral Reef Task Force and fishery management councils and in consultation with affected States, territorial, commonwealth, tribal, and local government agencies, nongovernmental organizations, the scientific community, and commercial interests.

Sec. 4. *U.S. Coral Reef Task Force.* The Secretary of the Interior and the Secretary of Commerce, through the Administrator of the National Oceanic and Atmospheric Administration, shall co-chair a U.S. Coral Reef Task Force ("Task Force"), whose members shall include, but not be limited to, the Administrator of the Environmental Protection Agency, the Attorney General, the Secretary of the Interior, the Secretary of Agriculture, the Secretary of Commerce, the Secretary of Defense, the Secretary of State, the Secretary of Transportation, the Director of the National Science Foundation, the Administrator of the Agency for International Development, and the Administrator of the National Aeronautics and Space Administration. The Task Force shall oversee implementation of the policy and Federal agency responsibilities set forth in this order, and shall guide and support activities under the U.S. Coral Reef Initiative ("CRI"). All Federal agencies whose actions may affect U.S. coral reef ecosystems shall review their participation in the CRI and the strategies developed under it, including strategies and plans of State, territorial, commonwealth, and local governments, and, to the extent feasible, shall enhance Federal participation and support of such strategies and plans. The Task Force shall work in cooperation with State, territorial, commonwealth, and local government agencies, nongovernmental organizations, the scientific community, and commercial interests.

Sec. 5. *Duties of the U.S. Coral Reef Task Force.* (a) *Coral Reef Mapping and Monitoring.* The Task Force, in cooperation with State, territory, commonwealth, and local government partners, shall coordinate a comprehensive program to map and monitor U.S. coral reefs. Such programs shall include, but not be limited to, territories and commonwealths, special marine protected areas such as National Marine Sanctuaries, National Estuarine Research Reserves, National Parks, National Wildlife Refuges, and other entities having significant coral reef resources. To the extent feasible, remote sensing capabilities shall be developed and applied to this program and local communities should be engaged in the design and conduct of programs.

(b) *Research.* The Task Force shall develop and implement, with the scientific community, research aimed at identifying the major causes and consequences of degradation of coral reef ecosystems. This research shall include fundamental scientific research to provide a sound framework for the restoration and conservation of coral reef ecosystems worldwide. To the extent feasible, existing and planned environmental monitoring and mapping programs should be linked with scientific research activities. This Executive order shall not interfere with the normal conduct of scientific studies on coral reef ecosystems.

(c) *Conservation, Mitigation, and Restoration.* The Task Force, in cooperation with State, territorial, commonwealth, and local government agencies, nongovernmental organizations, the scientific community and commercial interests, shall develop, recommend, and seek or secure implementation of measures necessary to reduce and mitigate coral reef ecosystem degradation and to restore damaged coral reefs. These measures shall include solutions to problems such as land-based sources of water pollution, sedimentation, detrimental alteration of salinity or temperature, over-fishing, over-use, collection of coral reef species, and direct destruction caused by activities such as recreational and commercial vessel traffic and treasure salvage. In developing these measures, the Task Force shall review existing legislation

to determine whether additional legislation is necessary to complement the policy objectives of this order and shall recommend such legislation if appropriate. The Task Force shall further evaluate existing navigational aids, including charts, maps, day markers, and beacons to determine if the designation of the location of specific coral reefs should be enhanced through the use, revision, or improvement of such aids.

(d) *International Cooperation.* The Secretary of State and the Administrator of the Agency for International Development, in cooperation with other members of the Coral Reef Task Force and drawing upon their expertise, shall assess the U.S. role in international trade and protection of coral reef species and implement appropriate strategies and actions to promote conservation and sustainable use of coral reef resources worldwide. Such actions shall include expanded collaboration with other International Coral Reef Initiative ("ICRI") partners, especially governments, to implement the ICRI through its Framework for Action and the Global Coral Reef Monitoring Network at regional, national, and local levels.

Sec. 6. This order does not create any right or benefit, substantive or procedural, enforceable in law or equity by a party against the United States, its agencies, its officers, or any person.

William J. Clinton

THE WHITE HOUSE,
June 11, 1998.

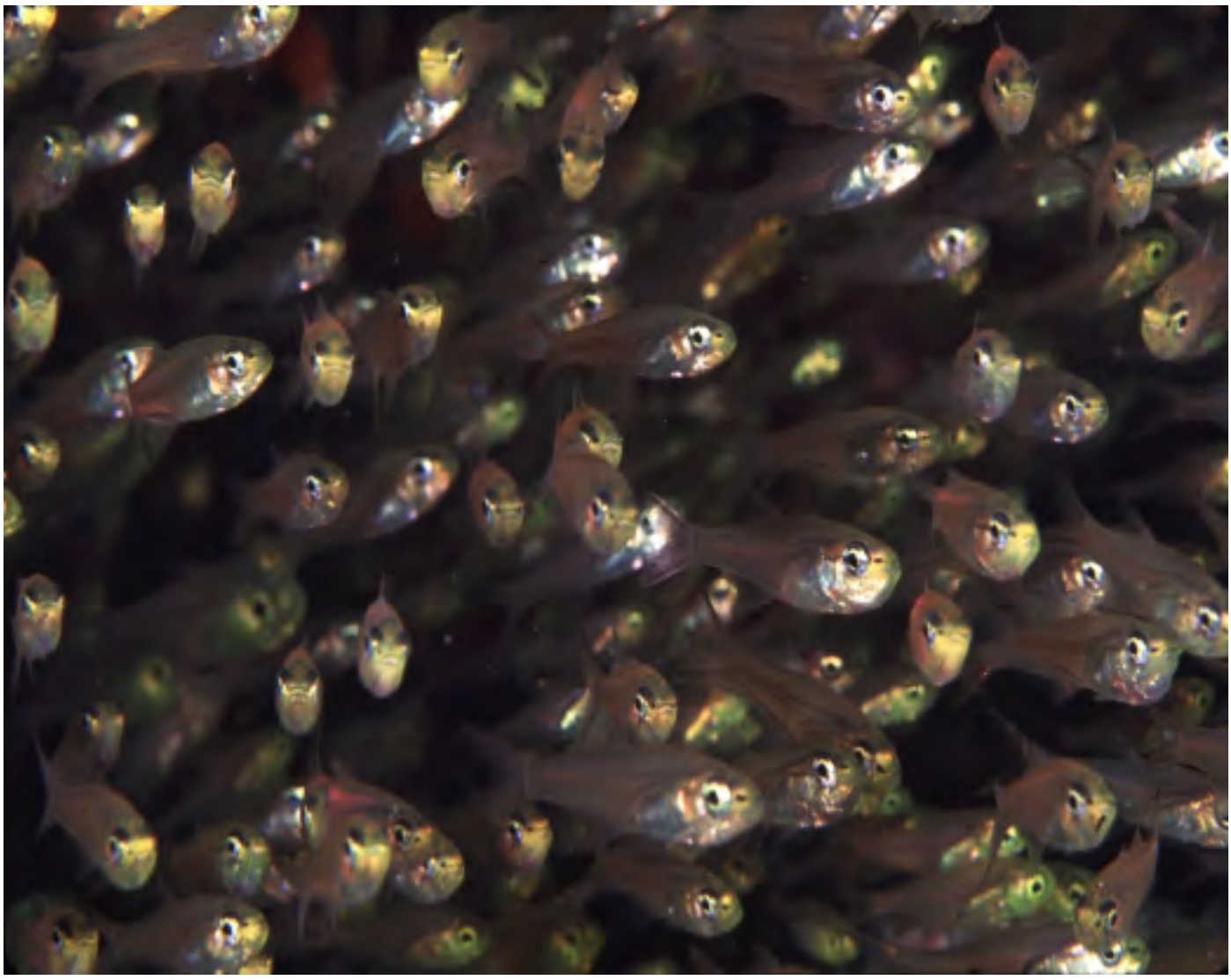
[FR Doc. 98-16161]
Filed 6-15-98; 8:45 am]
Billing code 3195-01-P

APPENDIX C

DoD Coral Reef Protection Implementation Plan
Policy Statements and Memoranda

✧ DoD Policy Statement on Coral Reefs (1997)

✧ DUSD(ES)/EQ-CO Memorandum of 3 August 1998, "Executive Order 13089 – Coral Reef Protection."



These small cardinalfish school for protection from predators in Palau. Cardinalfish brood their young in their mouth.

Department of Defense Policy Statement on Coral Reefs

The Department of Defense (DoD) recognizes coral reefs and related endemic ecosystems (mangroves and sea grass beds) as biologically rich and diverse habitats and gives a high priority to their protection. Along with other nations in the International Coral Reef Initiative, including Japan, Australia, Jamaica, France, the United Kingdom, and the Philippines, the United States is developing a coordinated strategy for coral reef research and management world-wide.

The major goal of DoD's involvement is effective and long-term conservation, through the development of management policies and procedures for coral reefs held in trust by the U.S. military world-wide in a manner consistent with the balance of interests reflected in the 1982 United Nations *Convention on the Law of the Sea* (LOS Convention).

The Department of Defense, in cooperation with designated co-trustees, will identify important reef areas held in trust by the U. S. military and develop management guidelines and policies to enhance protection of these coral reef ecosystems. Furthermore, DoD will ensure that actions in proximity to coral reefs will be consistent with United States' rights and obligations under the LOS Convention, DoD mission requirements, and conform to host nation agreements.

OFFICE OF THE UNDER SECRETARY OF DEFENSE

3000 DEFENSE PENTAGON
WASHINGTON DC 20301-3000

ACQUISITION AND
TECHNOLOGY

03 AUG 1998

DUSD(ES)/EQ-CO

MEMORANDUM FOR DEPUTY ASSISTANT SECRETARY OF THE ARMY
(ENVIRONMENT, SAFETY AND OCCUPATIONAL
HEALTH), OASA (IL&E)
DEPUTY ASSISTANT SECRETARY OF THE NAVY
(ENVIRONMENT AND SAFETY), OASN (I&E)
DEPUTY ASSISTANT SECRETARY OF THE AIR FORCE
(ENVIRONMENT, SAFETY AND OCCUPATIONAL
HEALTH), SAF/MIQ
DIRECTOR, DEFENSE LOGISTICS AGENCY (CAAE)

SUBJECT: Executive Order 13089 – Coral Reef Protection

President Clinton signed the attached Executive Order for Coral Reef Protection on June 11 as part of the United States' contributions to the Year of the Ocean. This Executive Order requires federal agencies to identify their actions that may affect U.S. coral reef ecosystems; use their programs and authorities to protect and enhance the conditions of such ecosystems; and ensure that any actions they authorize, fund, or carry out will not degrade the conditions of such ecosystems. Exceptions to this policy may be allowed during time of war or national emergency, when necessary for reasons of national security (as determined by the President), during emergencies posing an unacceptable threat to human health or safety or to the marine environment; or in any case that constitutes a danger to human life or a real threat to vessels, aircraft, platforms, or other man-made structures at sea.

It is DoD policy to protect the U.S. and International coral reefs and to avoid impacting coral reefs to the maximum extent feasible. Furthermore, we will responsibly manage and restore coral reefs ecosystems in carrying out the terms of all laws, regulations, and policies concerning coastal zone management and coral reef protection.

To implement this policy within the Department of Defense, any action that is likely to affect a U.S. coral reef ecosystem shall be the subject of an environmental review in accordance with the National Environmental Policy Act, Executive Order 12114, and current DoD policies. Mitigating measures are required where coral reef impacts are unavoidable. Because re-establishment of living coral reef ecosystems may take hundreds of years, full mitigation/replacement is generally not feasible. Therefore, proponents of the activity that will result in the loss of such resources shall recommend

appropriate compensatory measures. Federal regulations regarding Natural Resources Damage Assessments may assist in developing criteria for such mitigation.

We must ensure that our commanding officers have adequate information and planning tools to use in carrying out military operations that might affect coral reefs. To assist in this effort, I urge wide dissemination of the attached *DoD Commander's Guide to Coral Reefs*. This guide contains a DoD policy statement on coral reefs that we issued on September 3, 1997. Limited hard copies of the guide are available for distribution. In addition, the guide is accessible on DoD's Environmental Security Home Page at http://www.denix.osd.mil under Conservation Programs.

If you have any questions, please contact Mr. Peter Boice at (703) 604-0524.

Sherri W. Goodman
Deputy Under Secretary of Defense
(Environmental Security)

Attachments

APPENDIX D

Military Service Coral Reef Protection Policy Statements and Memoranda

✧ CNO Letter of 4 Dec 98, "Coral Reef Protection Policy."

✧ DAIM-ED-N Memorandum of 10 Sept 98, "U.S. Coral Reef Initiative."

✧ HQ USAF/ILEV Memorandum for ALMAJCOM/CEV, HQ USAFA/CEV, "Executive Order 13089, Coral Reef Protection."

✧ Army Corps of Engineers Memorandum for Field of 26 Apr 2000, Entitled "Special Emphasis Given to Coral Reef Protection under the Clean Water Act, Marine Protection, Research and Sanctuaries Act, Rivers and Harbors Act and Federal Project Authorities."

Caribbean bonefish are usually found on sandy flats adjacent to coral reefs.

DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
2000 NAVY PENTAGON
WASHINGTON, D.C. 20350-2000

IN REPLY REFER TO

5090
Ser N45D/8U589139
4 Dec 98

From: Chief of Naval Operations

Subj: CORAL REEF PROTECTION POLICY

Ref: (a) OPNAVINST 5090.1B

Encl: (1) OUSD memo of 3 Aug 98 (w/E.O. 13089 attached)

1. Enclosure (1) forwarded and established Department of Defense implementation guidance on the President's Coral Reef Executive Order 13089. This Executive Order requires Federal agencies to identify their actions that may affect coral reef ecosystems in the United States and in U.S. territories. It also calls for Federal agencies to use their program authorities to protect and enhance coral reef ecosystems, and to ensure that Federal agency actions do not degrade the conditions of such ecosystems. Exceptions to this policy are authorized for certain conditions such as during time of war, national emergency, or when necessary for safety of life at sea, i.e., force majeure.

2. It is Navy policy to comply with Executive Order 13089. To provide for the protection of both U.S. and International coral reefs, Navy will avoid impacting coral reefs to the maximum extent feasible. To implement the Executive Order and DoD policy, Navy commands are to conduct environmental reviews of proposed actions that are likely to affect a U.S. coral reef ecosystem in accordance with environmental planning guidance outlined in reference (a). In cases where significant adverse impact is likely and NEPA analysis is required, a statement regarding the selection of a preferred alternative, emphasizing special considerations for coral reef protection and recommended mitigation measures, shall be included in the final environmental documentation.

3. Navy has a long and distinguished tradition of being a good "Steward of the Sea" and is dedicated to preserving and enhancing the natural resources of our world's oceans. Nevertheless, it is recognized that some mission-essential shore and ocean-going activities could affect coral reefs. To better understand how frequently these activities may be occurring, any action that is likely to adversely affect U.S. coral reef ecosystems or that may qualify as an exemption under the Executive Order, must be promptly reported to this office.

Subj: CORAL REEF PROTECTION POLICY

Any coral reef research, monitoring, restoration and/or mitigation shall also be reported.

4. Every effort should be made to locate and map coral reefs adjacent to Navy installations as well as in areas where Navy operates in order to avoid these resources or to assess impacts. Detailed maps of coral reef ecosystems are available at *http://www.ogp.noaa.gov/misc/coral/sor, (State of the Reefs Regional and Global Perspectives, 10/06/98)*. These and other available sources should be used to verify and assess the proximity of operations to coral reef ecosystems. If additional mapping or information is necessary to identify the location of coral reef ecosystems, funds for this purpose should be sought through the POM process.

5. A U.S. Coral Reef Task Force, established by enclosure (1), will meet periodically to assess Federal agency compliance with the Executive Order. CNO N45 will disseminate all relevant policies developed by the Task Force to major claimants.

6. Point of contact for this matter at CNO N45 is Mr. Thomas Egeland, N45D, at (202) 685-9329 or DSN 325-9329, Internet address: egelandta@hq.navfac.navy.mil.

A. A. GRANUZZO
By direction

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Subj: CORAL REEF PROTECTION POLICY

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DEPARTMENT OF THE AIR FORCE
WASHINGTON, DC

15 OCT 1998

MEMORANDUM FOR ALMAJCOM/CEV
HQ USAFA/CEV

FROM: HQ USAF/ILEV
1260 Air Force Pentagon
Washington, DC 20330-1260

SUBJECT: Executive Order 13089, Coral Reef Protection

We forward for your information and appropriate action the memorandum from Ms. Sherry W. Goodman, the Deputy Under Secretary of Defense for Environmental Security (DUSD(ES)), regarding the implementation of Executive Order 13089, *Coral Reef Protection* (attachment 1). Please convey the DUSD(ES) memo, along with the copy of the *Coral Reef Conservation Guide for the Military* (attachment 2), to each of your installations which either have coral reefs along their shorelines or whose operations may impact coral reefs.

E.O. 13089 requires federal agencies to identify their actions that may affect US coral reef ecosystems, use their programs and authorities to protect and enhance the conditions of such ecosystems, and ensure that any actions they authorize, fund, or carry out will not degrade the conditions of such ecosystems. If you or members of your staff have questions, please contact Dr. Doug Ripley, HQ USAF/ILEVP, DSN 664-0632, e-mail: Douglas.Ripley@af.pentagon.mil.

Teresa R. Pohlman

TERESA R. POHLMAN
Chief, Environmental Division
DCS/Installations & Logistics

Attachments:
1. DUSD(ES) Memo, 3 Aug 98
2. Coral Reef Conservation Guide for the Military

cc:
HQ AFCEE/ECR

DEPARTMENT OF THE ARMY
ASSISTANT CHIEF OF STAFF FOR INSTALLATION MANAGEMENT
600 ARMY PENTAGON
WASHINGTON DC 20310-0600

REPLY TO
ATTENTION OF

10 SEP 1998

DAIM-ED-N

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: U.S. Coral Reef Initiative

1. References:

a. Executive Order 13809, Coral Reef Protection, 11 June 1998.

b. Memorandum from DUSD (ES), 3 August 1998, subject: Executive Order 13809 – Coral Reef Protection.

2. Executive Order 13809 directed federal agencies to identify actions that may affect U.S. coral reef ecosystems, protect and enhance those ecosystems and ensure that any Army actions do not degrade such ecosystems.

3. The Army is committed to a policy of sound stewardship of our natural resources including full compliance with the protection of coral reefs. Army installations whose actions may affect U.S. coral reef ecosystems shall follow the policy and protocols provided in the Executive Order 13809.

4. Major Army Commands (MACOMs) are encouraged to communicate with the points of contact below if they have information to add that will help the Army conserve and protect coral reef ecosystems. Installation and MACOM natural resource managers are encouraged to review the "Coral Reef Conservation Guide for the Military" at http://www.denix.osd.mil/denix/Public/ES-Programs/Conservation/Legacy/Coral/coral.html, for useful information about basic coral reef ecology, threats to reefs and preventative and remedial action.

DAIM-ED-N
SUBJECT: U.S. Coral Reef Initiative

5. The Point of Contact for the Coral Reef Initiative is Mr. Steve Getlein, U.S. Army Environmental Center, (410) 436-1592 e-mail: sgetlei@aec.apgea.army.mil. The Office of the Directorate for Environmental Programs' point of contact for this effort is Mr. David L. Booker (703) 693-0520 e-mail: BookeDL@hqda.army.mil.

FOR THE ASSISTANT CHIEF OF STAFF FOR INSTALLATION MANAGEMENT:

JAMES E. DRIES
Colonel, GS
Director, Environmental Programs

DISTRIBUTION:
COMMANDER
U.S. ARMY TRAINING AND DOCTRINE COMMAND, ATTN: ATBO-SE (MS. POTTER), BUILDING 10, FORT MONROE, VA 23651-5000
U.S. ARMY MATERIEL COMMAND, ATTN: AMCEN-A (MS. POMERLEAU), 5001 EISENHOWER AVENUE, ALEXANDRIA, VA 22333-0001
U.S. ARMY FORCES COMMAND, ATTN: AFPI-ENE (MR. FRNKA), FORT MCPHERSON, GA 30330-6000
U.S. ARMY, EUROPE, AND SEVENTH ARMY, ATTN: AEAEN-ENRV (MR. ZETTERSTEIN), UNIT #29351, APO AE 09014-0100
U.S. ARMY PACIFIC, ATTN: APEN-E (MR. HARADA), FORT SHAFTER, HI 96858-5100
U.S. ARMY CORPS OF ENGINEERS, ATTN: CEMP-RI (MR. LUBBERT), 20 MASSACHUSETTS AVENUE, NW., WASHINGTON, DC 20314-1000
U.S. ARMY MEDICAL COMMAND, ATTN: MCFA-E (MR. GONZALEZ), 2050 WORTH ROAD, FORT SAM HOUSTON, TX 78234-600
EIGHTH U.S. ARMY, ATTN: EAEN-E (MR. EDDY), UNIT #15236, APO AP 96205-0009
U.S. ARMY MILITARY DISTRICT OF WASHINGTON, ATTN: ANEN (MR. DUNN), FORT LESLEY J. MCNAIR, WASHINGTON, DC 20319-5050
MILITARY TRAFFIC MANAGEMENT COMMAND, ATTN: MTPAL-FE (MR. MERRILL), 5611 COLUMBIA PIKE, FALLS CHURCH, VA 22041-5050
U.S. ARMY RESERVE COMMAND, ATTN: AFRC-ENV (MS. WORRELL), 1401 DESHLER STREET, SW., FORT MCPHERSON, GA 30330-2000
(CONT)

DISTRIBUTION: (CONT)
CHIEF, NATIONAL GUARD BUREAU, ATTN: NGB-ILE-E (COL DEKRAMER), ARMY NATIONAL GUARD READINESS CENTER, 111 SOUTH GEORGE MASON DRIVE, ARLINGTON, VA 22204-1382
SUPERINTENDENT, U.S. MILITARY ACADEMY, ATTN: MAEN-EV (MR. SHANDLING), WEST POINT, NY 10996-1592

DEPARTMENT OF THE ARMY
U.S. Army Corps of Engineers
WASHINGTON, D.C. 20314-1000

REPLY TO
ATTENTION OF

CECW-AA

26 APR 2000

MEMORANDUM FOR COMMANDERS, MAJOR SUBORDINATE COMMANDS

SUBJECT: Memorandum for the Field, Entitled "Special Emphasis Given to Coral Reef Protection under the Clean Water Act, Marine Protection, Research and Sanctuaries Act, Rivers and Harbors Act and Federal Project Authorities

1. The world's coral reefs are in serious jeopardy, threatened by an increasing array of over-exploitation, pollution, habitat destruction, invasive species, disease and bleaching and global climate change. The rapid decline of these ancient, complex and biologically diverse marine ecosystems has significant social, economic and environmental impacts on coastal communities here in the U.S. and around the World.

2. In response to this growing global environmental crisis, President Clinton issued the Coral Reef Protection Executive Order 13089 in June 1998. Through the policies set forth in this Executive Order, the Federal government was directed to strengthen its stewardship of the nation's coral reef ecosystems by directing Federal agencies, whose activities may affect U.S. coral reef ecosystems, to: (1) identify their actions that may affect these ecosystems, (2) utilize their programs and authorities to protect and enhance these ecosystems and (3) ensure any actions undertaken, to the extent permitted by law, do not degrade these ecosystems. The Executive Order also established the U.S. Coral Reef Task Force (CRTF), whose members include the major Federal agencies responsible for various aspects of coral reef conservation, plus our state and territorial partners. The CRTF is presently finalizing the first iteration of the "National Action Plan To Conserve Coral Reefs" which will provide a flexible, long-term strategy for implementing the Executive Order. The Action Plan is intended to be revisited periodically and can be viewed on the Internet at http://coralreef.gov together with other pertinent documents.

3. Recognizing the importance and sensitivity of these threatened ecosystems, the attached guidance was collaboratively developed with the Environmental Protection Agency, emphasizing and clarifying the protection we can afford to the Nation's valuable coral reef ecosystems under the Clean Water Act, Section 404 regulatory program; the Marine Protection, Research and Sanctuaries Act, Sections 102 and 103; the Rivers and Harbors Act, Section 10 requirements; and, the numerous Federal project authorities undertaken by the U.S. Army Corps of Engineers. In emphasizing the importance of providing such protection in any Corps action that may directly or indirectly affect coral reefs, you are directed to meet the three steps outlined in paragraph 2 above in project and/or permit environmental documents as they are developed and/or updated.

4. The sensitivity of coral reefs to even slight changes in their physical, chemical, or biological environment requires special care by the Corps to ensure that the scope of analysis for any prospective Corps-sponsored or Corps-authorized action is sufficiently broad to include the consideration of the potential direct and indirect effects on coral reefs. Because of coral's extreme sensitivity to environmental change, the distance from a Corps-controlled activity that may be adequate to insulate more tolerant, non-motile biological species from project-generated adverse effects may not necessarily be sufficient to protect coral reefs. Since the Corps may have primary control over effects such as the turbidity or leachate from the construction or subsequent operation of a sponsored or authorized activity, we must be careful to ensure that the project scope of analysis is not determined so conservatively as to preclude the consideration of such direct and indirect effects on coral reefs.

5. All Corps personnel involved in the planning, design, construction or regulation of projects that have the potential to affect coral reefs, directly or indirectly, should be made aware of the attached joint Environmental Protection Agency / Department of the Army policy guidance, the terms of which are effective immediately.

FOR THE COMMANDER:

Atch

HANS A. VAN WINKLE
Major General, USA
Deputy Commander for
Civil Works

APPENDIX E

Related DoD Policy Reference List

Compliance Outside of the U.S.

DoD Directive 6050.16, "DoD Policy for Establishing and Implementing Environmental Standards at Overseas Installations" (20 Sep 1991) and DoD Instruction 4715.5-G, "Overseas Environmental Baseline Guidance Document" (15 March 2000) issued by DUSD(ES) clarifies how DoD addresses environmental standards outside the United States. DoD operations, activities, and installation activities in and around foreign nations shall be consistent with international agreements, status of forces agreements, final governing standards (FGS) issued for host nations, or where no FGS have been issued, the criteria under the Overseas Environmental Baseline Guidance Document (OEBGD). Many of the countries in which the military operates have invoked similar coral reef protection policies, laws, or initiatives as apply in the United States. Military operating overseas should be aware of and comply with these mandates.

The OEBGD can be found on the DoD Environmental Web Site www.denix.osd.mil.

Related Military Service Policy and Guidance

DoD Instruction 4715.3, Environmental Conservation Program (3 May 96). Assigns responsibilities and prescribes policy and procedures for general conservation management, natural resources management, and cultural resources management on DoD property.

Memorandum on Implementation of Ecosystem Management in the DoD, Office of the Under Secretary of Defense (8 Aug 94). Assigns ecosystem management as the basis of future management of DoD lands and waters and provides guidelines for ecosystem management implementation.

Army Regulation 200-3, Natural Resources-Land, Forest and Wildlife Management (28 Feb 95). Prescribes current Army policies, procedures, and standards for the conservation, management, and restoration of land and the renewable natural resources consistent with the local military mission, national security, and current Federal laws pertaining to renewable natural resources and the quality of the environment.

Army Regulation 200-2, Environmental Effects of Army Actions. Sets forth policy, responsibilities, and procedures for integrating environmental considerations into Army planning and decisionmaking.

OPNAVINST 5090.1B, Change 2, Environmental and Natural Resources Program Manual (9 Sept 99). Provides requirements, assigns responsibilities and issues policy for the management of the environment and natural resources for all Navy ships and shore activities.

NAVFAC Natural Resources Management Procedural Manual, P-73, Vol II. Provides guidance and procedures for implementation of natural resources regulations on Navy property.

Marine Corps Order P5090.2A, Environmental Compliance and Protection Manual (10 Jul 98). Describes the requirements of Federal environmental regulations and implements DoD environmental policies.

Air Force Instruction 32-7064, Integrated Natural Resources Management (1 Aug 97). Addresses the management of natural resources on Air Force properties to comply with federal, state and local standards. Provides MAJCOMs and installations with a framework for documenting and maintaining AF natural resources management programs.

Air Force Instruction 32-7061, Secretary of the Air Force Civil Engineering, The Environmental Impact Analysis Process. Implements Air Force Policy Directive (AFPD) 32- 70, Environmental Quality. Describes specific tasks and procedures for the Air Force Environmental Impact Analysis Process (EIAP).

Seasnake.

Indo-Pacific coral reef.

Female grey reef shark with remora.

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